Quoniam

Quoniam Global equity Enhanced presentation pack

November 2024

1. **Quoniam company overview**
2. Quoniam factor based approach
3. Global Equity enhanced performance and characteristics

AGENDA

We offer a broad range of systematic investment strategies

Strategy profiles

Target range (absolute return)

GDS
4–12%

News driven liquid alternative investment strategy

- Global data sentiment, 5% to 15% vol scalable

Equities Core
7– 8%

High return systematic alpha strategies

- Enhanced 1% TE
- **Core 2 to 3% TE**
- Active extension 4% TE

Equities MinRisk
6–7%

Defensive (low vol) strategies

- European Equity MinRisk
- Global Equity MinRisk
- Emerging Markets Equity MinRisk

Multi-asset
5–6%

Stock selection plus TAA

- Symetric
- Asymetric

Fixed income
3–5%

Factor **Credit strategies** with adjustable market risk

- MinRisk (Short Duration)
- Credit (Investment Grade)
- High Yield MinRisk

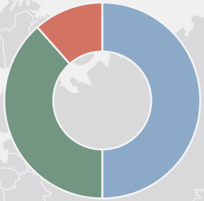
Quoniam Asset Management
Company key facts 12|2024

25
years' experience
in quantitative
asset management

120
professionals
in two offices in
Frankfurt and London

21
EUR bn assets
under management

3
Multi-Asset
8
Fixed Income



10
Equities

90+
individual portfolios
in equities, credits
and multi-asset

Pension schemes
42%

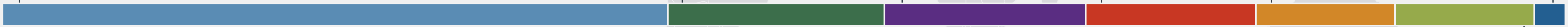
Insurances
14%

Non-profit
organisations
12%

Financial
institutions
10%

Pooled funds
10%

Other
1%



Government authorities
11%

Performance summary

EQUITIES Index-oriented	Performance (p.a.)	Index (p.a.)	Alpha A (p.a.)	Inform. Ratio	YtD	2023	2022	2021	2020	2019
					Value added					
Core Europe[1] *since 01/2000*	**5.3**	**3.8**	**1.5**	0.7	3.9	1.3	0.3	1.5	-1.8	-1.7
Small Cap Europe[2] *since 10/2010*	**11.0**	**8.9**	**2.1**	0.7	6.0	-0.1	0.6	3.3	-5.7	2.4
Core Plus Europe[3] *since 10/2011*	**12.4**	**9.0**	**3.4**	1.0	8.5	4.8	-1.5	4.1	2.0	-1.8
Index Enhanced Global[4] *since 05/2014*	**12.9**	**12.1**	**0.9**	0.7	0.8	0.3	2.8	1.8	-0.1	0.7
EQUITIES MinRisk *(defensive)*	**Performance** (p.a.)	**Index** (p.a.)	**Alpha** A (p.a.)	**Vola.** B	YtD	2023	2022	2021	2020	2019
					Difference to comparison index					
Europe[5] *since 11/2003*	**8.5**	**6.5**	**2.0**	-21%	4.4	-2.0	-2.9	-4.3	-5.4	-2.9
Global[6] *since 03/2010*	**8.6**	**9.4**	**-0.8**	-24%	-4.5	-9.8	5.4	-0.9	-12.1	-6.5
Emerging Markets[7] *since 06/2010*	**7.7**	**4.6**	**3.1**	-16%	6.3	5.1	9.4	14.6	-11.4	-4.3

A) Value added B) Volatility reduction vs. index
Gross figures, excluding non-transaction costs. The performance is based on the results of the presented strategy and its aggregated representative portfolios consisting of at least one or more asset-weighted single portfolios. The benchmark of the aggregated reference portfolios were calculated using the benchmarks of the underlying, asset-weighted portfolios).
1) EQ Core Europe (Benchmark: MSCI Europe / MSCI Europe Climate Change Benchmark), 2) EQ Small Cap Europe (Benchmark: MSCI Europe Small Cap / MSCI Europe Small Cap ESG Screened), 3) EQ Cor Plus Europe & Active Extension (Benchmark: MSCI Europe); 4) Index Enhanced Global (Benchmark: 50% S&P500 NR / 50% Stoxx 600 NR / MSCI World Extended SRI 5% Issuer Capped / MSCI World Standard), 5) EQ MinRisk Europe (Benchmark: MSCI Europe / STOXX 600 Total Return), 6) EQ MinRisk Global AC - DM hedged to EUR (Benchmark: MSCI AC World Net: DM Hedged to EUR / EM Unhedged), 7) EQ MinRisk EM (Benchmark: MSCI Emerging Markets); Performance; As of 11.2024

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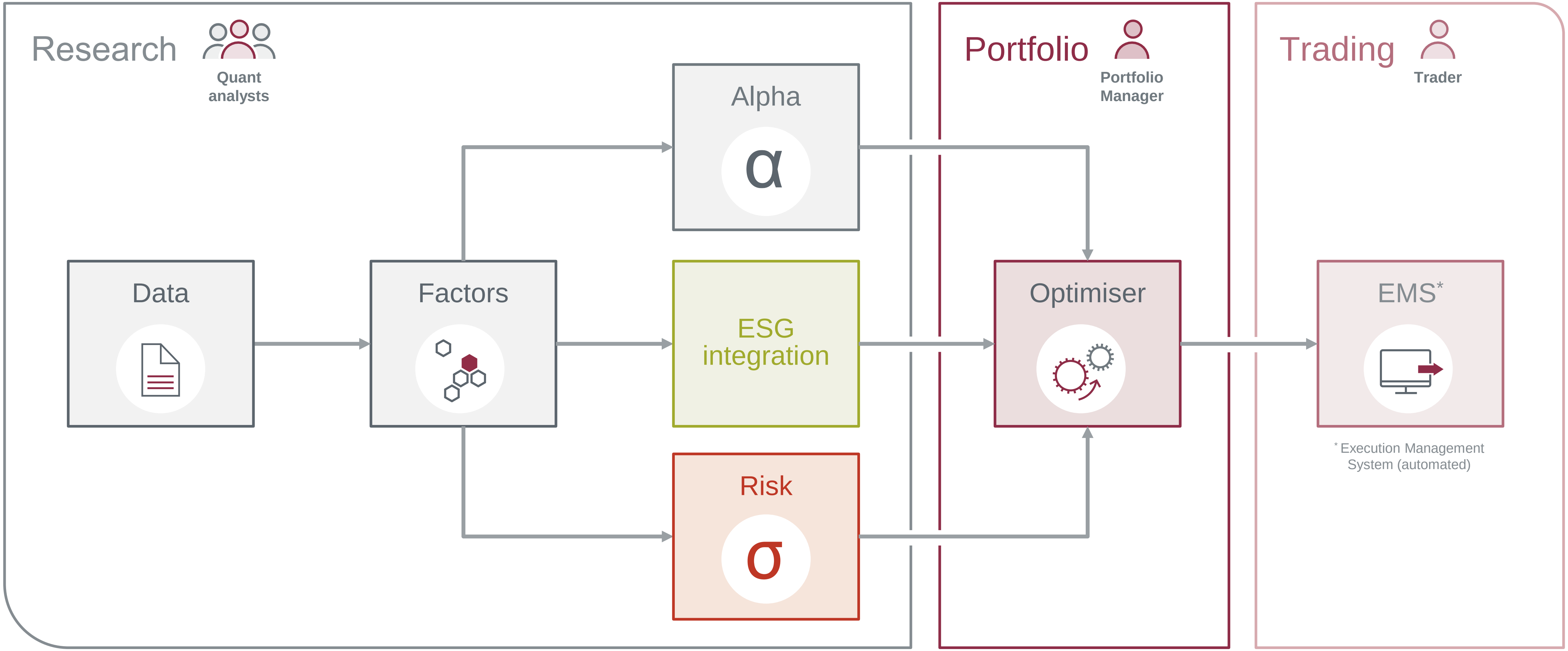
2. **Quoniam factor based approach**
3. Global Equity enhanced performance and characteristics

AGENDA

A data-driven investment process



Quoniam accesses tried and tested systematic factors
Alpha drivers combined with methods to manage risk

Alpha factors

Value
- Cheaply priced assets (low stock price multiples, high spread), buy at a discount[1]
- Might be cheap for a reason (higher risk, declining business)

Quality
- Low accruals, leverage and asset growth, high profitability[2]
- Typically, expensive

Momentum*
- Follow the trend, buy past winners[3]
- Potential drawdowns, if trend break is significant

Risk factors

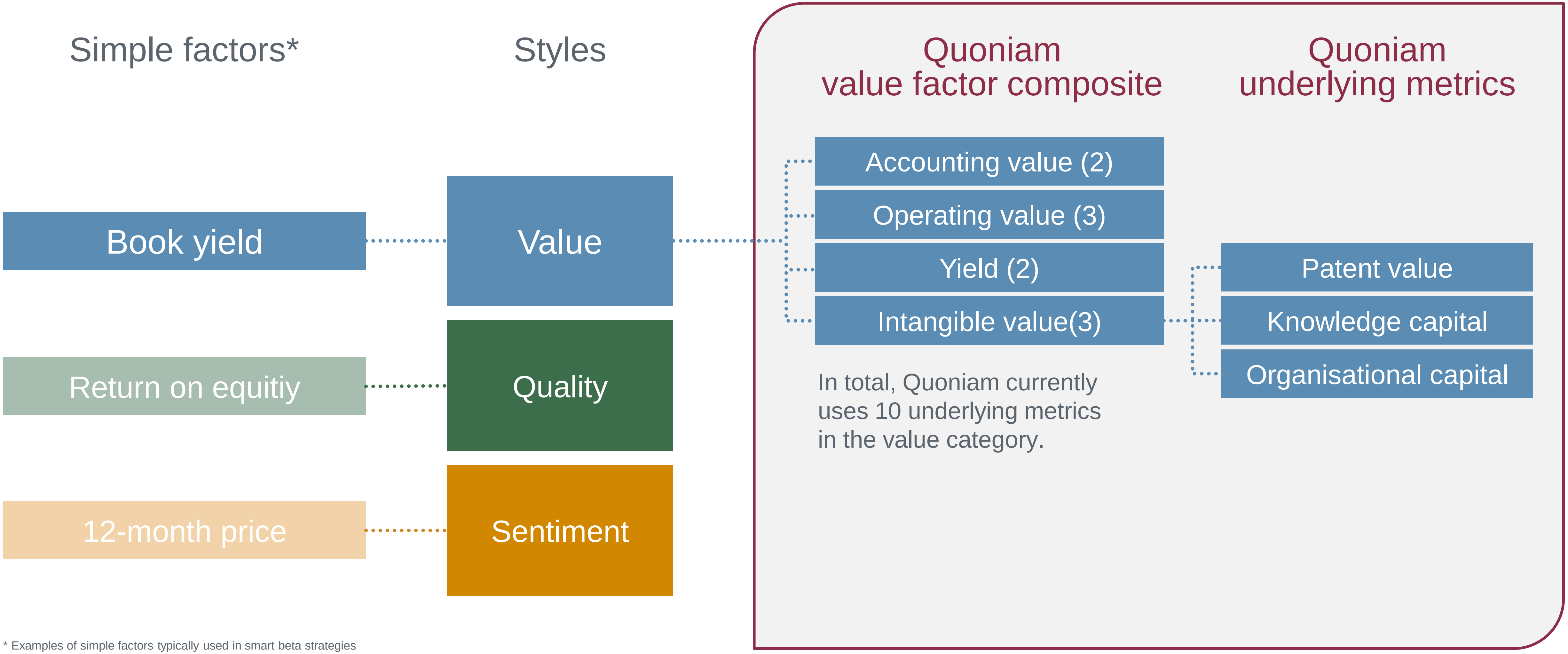
Risk
- Beta (market) and idiosyncratic
- Low-risk-anomalies[4]: excessive risks not rewarded

Size/Illiquidity
- Premium for taking reputation and business risk
- Long phases of underperformance possible

ESG
- In contrast to other risk premia, little reward to be gained by taking ESG risks
- Therefore, avoid negative ESG exposure

1) Fama/French 1992 2) Sloan 1996. Asness/Frazzini/Pedersn 2013 3) Jegadeesh/Titmam 1993. Carhartt 1997; 4) Haugen et al. 1972/2010. Carvalho et al.2014 (FI)

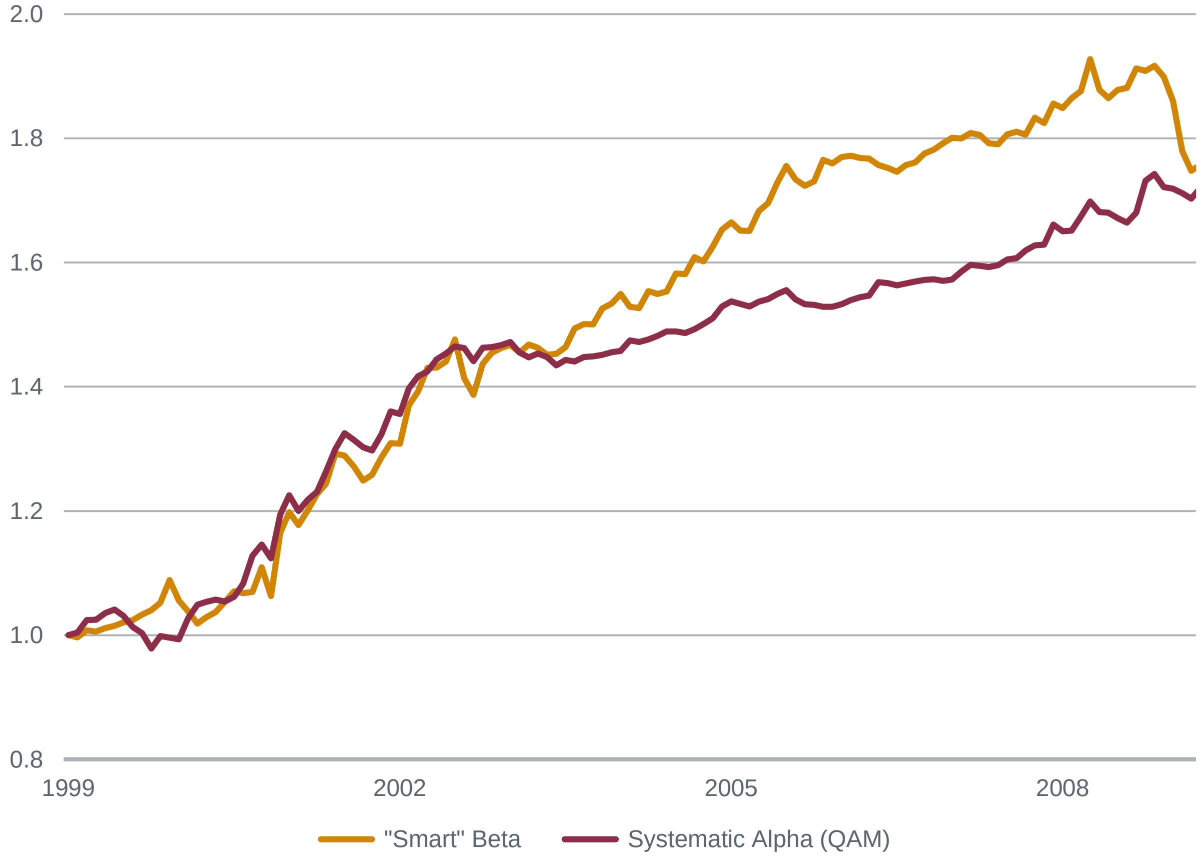
Proprietary factors: The evolution of factor-based investing



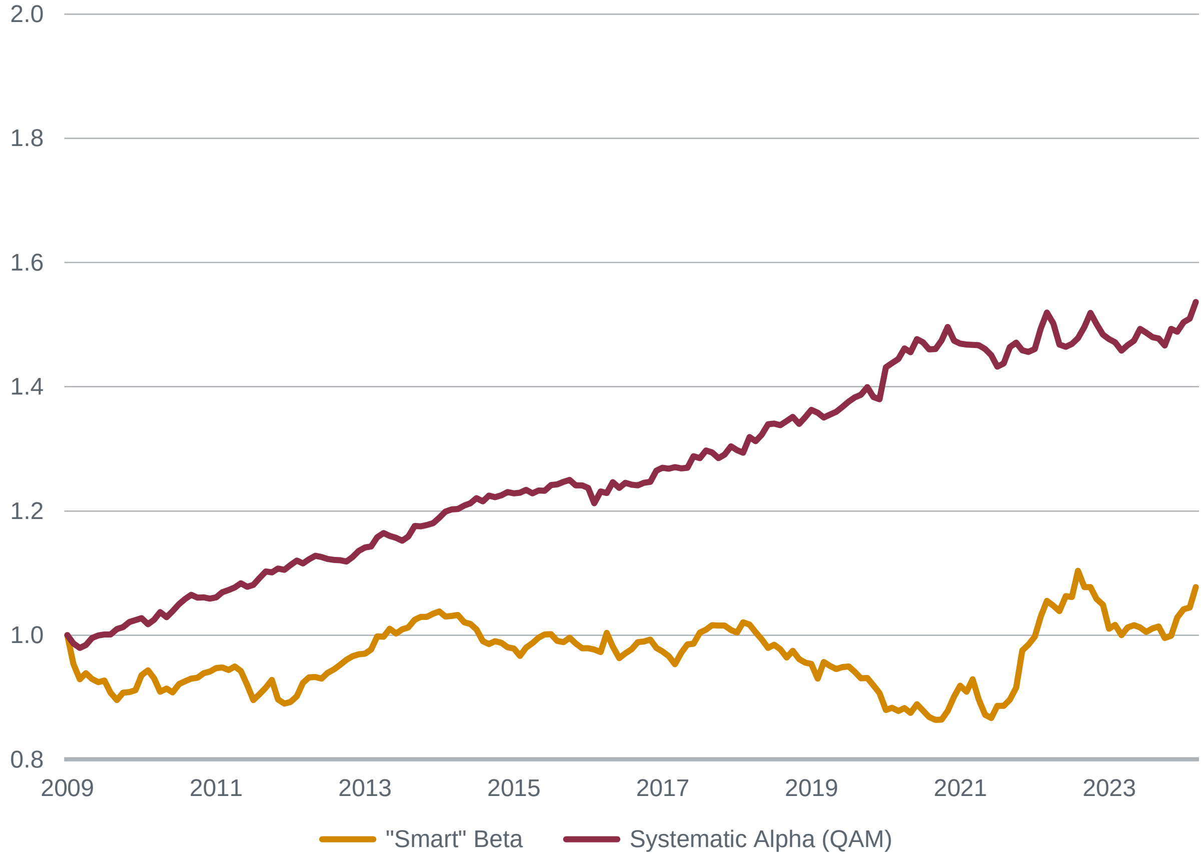
* Examples of simple factors typically used in smart beta strategies

The age of “smart” beta is over, systematic strategies have evolved beyond

Relative performance of risk premia 1999 – 2009



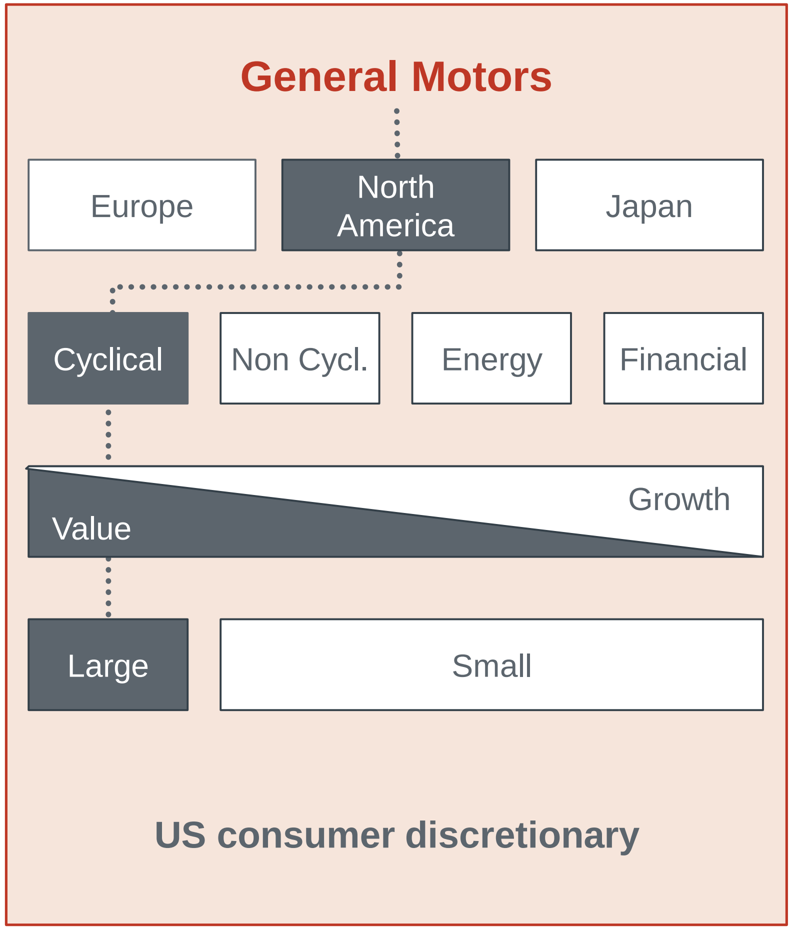
… and after GFC



Source: Quoniam Asset Management. Universe is Top 5,000 stocks in developed markets, market cap weighted. Chart shows relative performance of a) a simple risk premia strategy, b) a strategy using more advanced data / factors. Portfolio construction is size neutral relative to benchmark.

Alpha signal calculation: Using factor scores to compare stocks within broad peer groups

Peer grouping



Quoniam factors

Value

- **Accounting value** – Earnings, book multiples
- **Operating value** – Cash flow, sales… multiples
- **Yield** – Free cash flow to equities, divid., buyback
- **Intangible value** – Patent value, unrecorded intangibles

Quality

- **Growth** – Change in profitability, margins
- **Earnings quality** – Accruals in earnings, cash flow & B/sheet
- **Hubris** – CapEx, asset Gr., Ext. financing
- **Profitability** – Operating and B/S margin metrics
- **Safety** – Leverage, solvency, volatility
- **Bank quality** – Core capital, loan to deposit, …
- **Quality of intangibles** – Innovative effic., quality of patent pool, …

Sentiment

- **Earnings momentum** – Trend and revisions in EPS
- **Price momentum** – Risk adjusted and sales interacted
- **Ownership** – Director's dealings, holdings
- **Crowding** – Skewness, visibility, Chg in fund holdings
- **Short selling momentum** – Capacity utilisation, volume …

Dynamic factor allocation

Step 1:
Linear factor premia

Step 2:
Non-linearities

Excess Return$_{it+1}$ = $R_1 \times b_{1,it} + \dots + R_N \times b_{N,it}$ $+ \; e_{it}$

Factor signals (b, Betas)

- Fundamental and technical ratios (given for each asset)
- Limited statistical significance in a large set of ratios
- Solution: aggregate multiple ratios into composite factors (e.g., P/E, P/B)

Factor premia (R)

- Estimated factor premia/returns for each factor
- Use them as factor weights in the model
- Apply a pure bottom-up approach with separate premia for each peer group (region, sector, style)

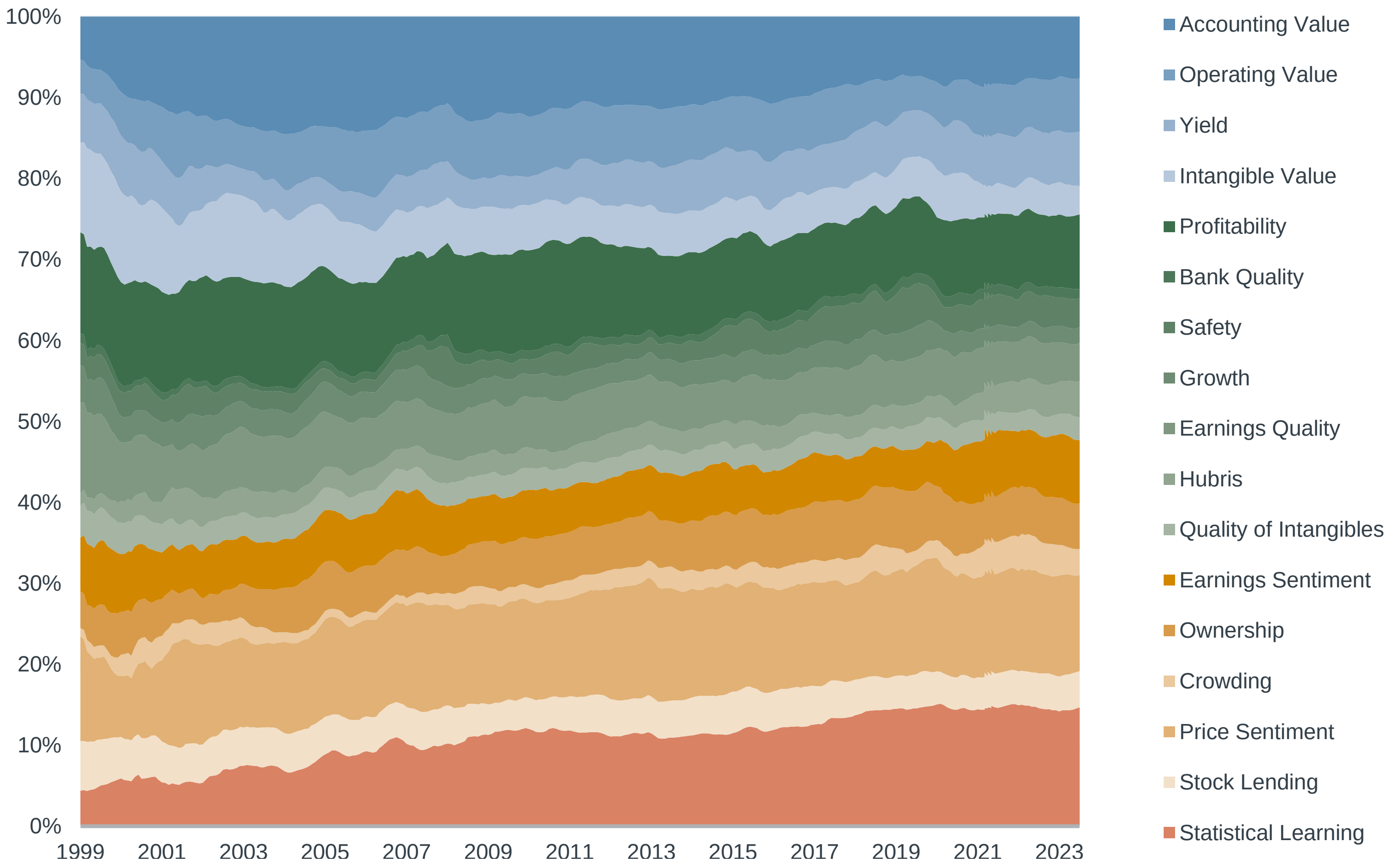
Machine Learning

- Applied to forecast error
- Accounts for non- linearities

Individual assets: i = 1,2,…,M
Given point in time: t
Individual factors: index for R = 1,2,…,N

Developed markets
Composition of factor premia over time

Alpha factor breakdown



- Factor efficiency changes over time, but remains well balanced.
- This adaptation reflects long term changes in factor efficiency.
- Thus, there is a reaction to changes in the market without aggressive factor timing.

Developed markets: Factor risk premia estimated in multivariate context over time, scaled to 100%; data as of 09.2024

Alpha signal: Calculation methodology

Metrics/factors

- Factors are metrics or a combination of metrics
- Data updated daily for each individual stock

Accounting value

E/P*: 19.9% | B/P**: 1.3

Factor scores

- Significance of the factors for the respective stock relative to the peer group
- Standard deviation as a measure (SD)

+1.1 SD

×

Factor returns

- Long term, historical premium for investing in the respective factor
- + (-) 1 SD indicates + (-) X,x% relative performance

2.5%

=

Factor contribution

- Expected relative performance for each individual factor for the respective stock
- = Factor score × factor return

Accounting value 2.8%

Alpha signal

Sum of the individual factor contributions

Value factors 4.3%

+

Quality factors -0.4%

+

Sentiment factors 1.1%

+

Machine learning –1.8%

= α

Sum 3.2%

Alpha signal: Systematic factor effects

$\text{Excess Return}_s = R_1 \times b_{1,s} + \ldots + R_N \times b_{N,s} + e_s$

…

…

…

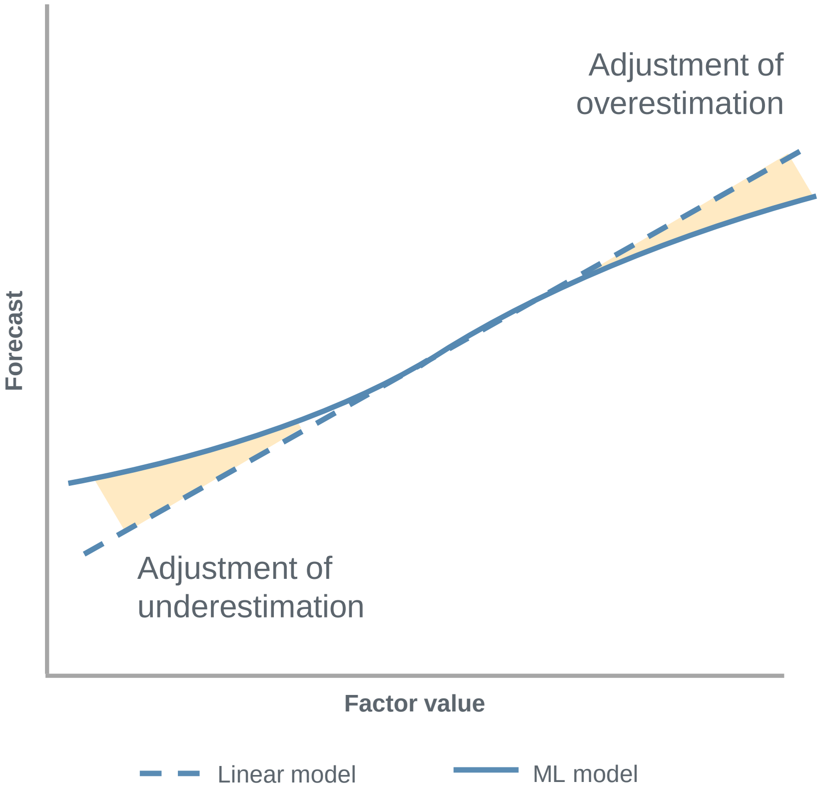
Machine learning corrects the forecast for non-linear correlations between the factors; as a rule, extreme values are adjusted.

Notes: Data for General Motors, September 2024; composite scores are standardised exposure of General Motors compared to the peer group US cyclical large caps. Value: Composite returns are long-term factor premiums for the group; returns and alpha calculated quarterly.
* Earnings-price ratio; ** Book to price

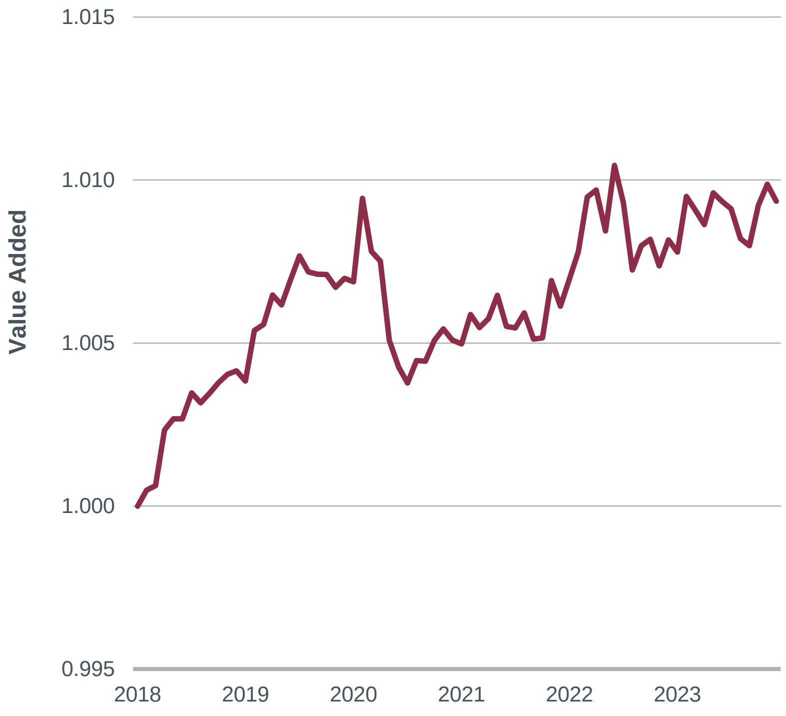
Machine learning

We have been using AI methodologies since 2018 to address non-linearities

Machine learning versus linear model



Machine learning boosts performance post-launch by 1%



Source: Quoniam. Simulated active returns of factor portfolios against same-cap benchmark. Portfolios weighted with signal * Mcap^0.7, signal > 0, long-only. Benchmarks weighted with Mcap^0.7. European universe. Monthly re-balancing with 9m holding period. Comparison of two models, one with Machine Learning and one without. Period: Feb 2018 – Jan 2024.

Base model

- Linear forecasting model based on value, quality and sentiment factors

Residual

- Forecast errors not explained by base model

Machine learning

- Identifies non-linear relationships between factors and residual returns

Determined machine learning factor

- Explains a part of the residual, enhances base model, leading to higher overall predictive power

The advantages of a quantitative approach to risk management

Multi-factor risk model

Market / macro	Factors	Industries	Countries	Currencies

Proprietary risk model: Motivation

Proactive instead of reactive

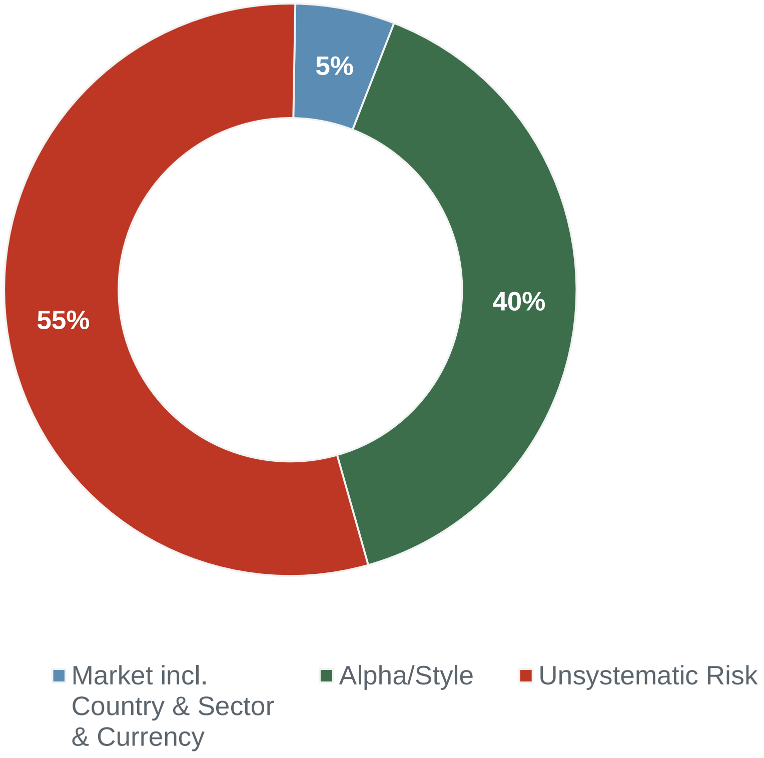
- Classic risk models often have time lags

Alpha risk management

- Diversification of alpha risks
- Avoidance of security-specific risks

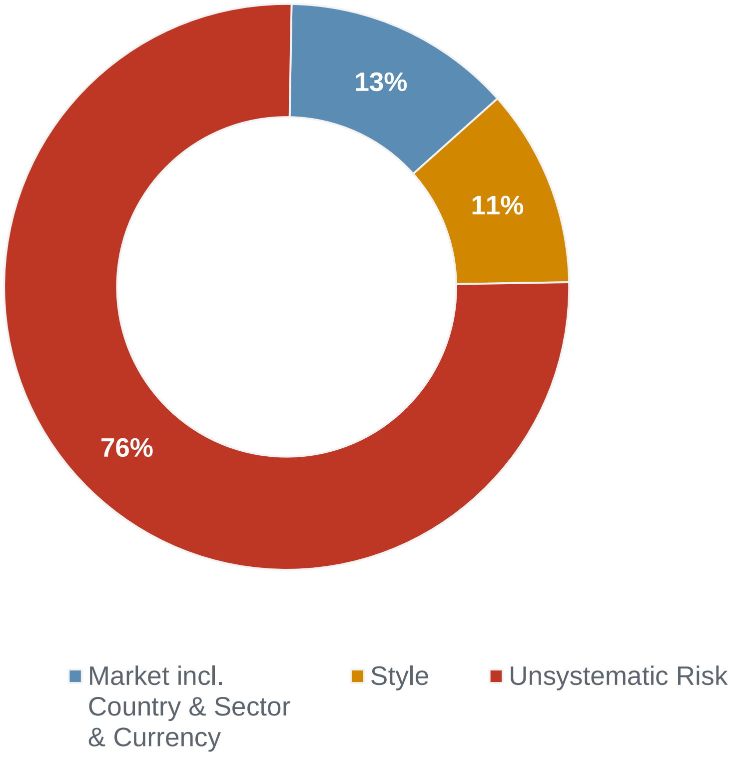
The proprietary risk model takes alpha risks into account

Quoniam risk model tracking error breakdown



TE 2,60

August 2024

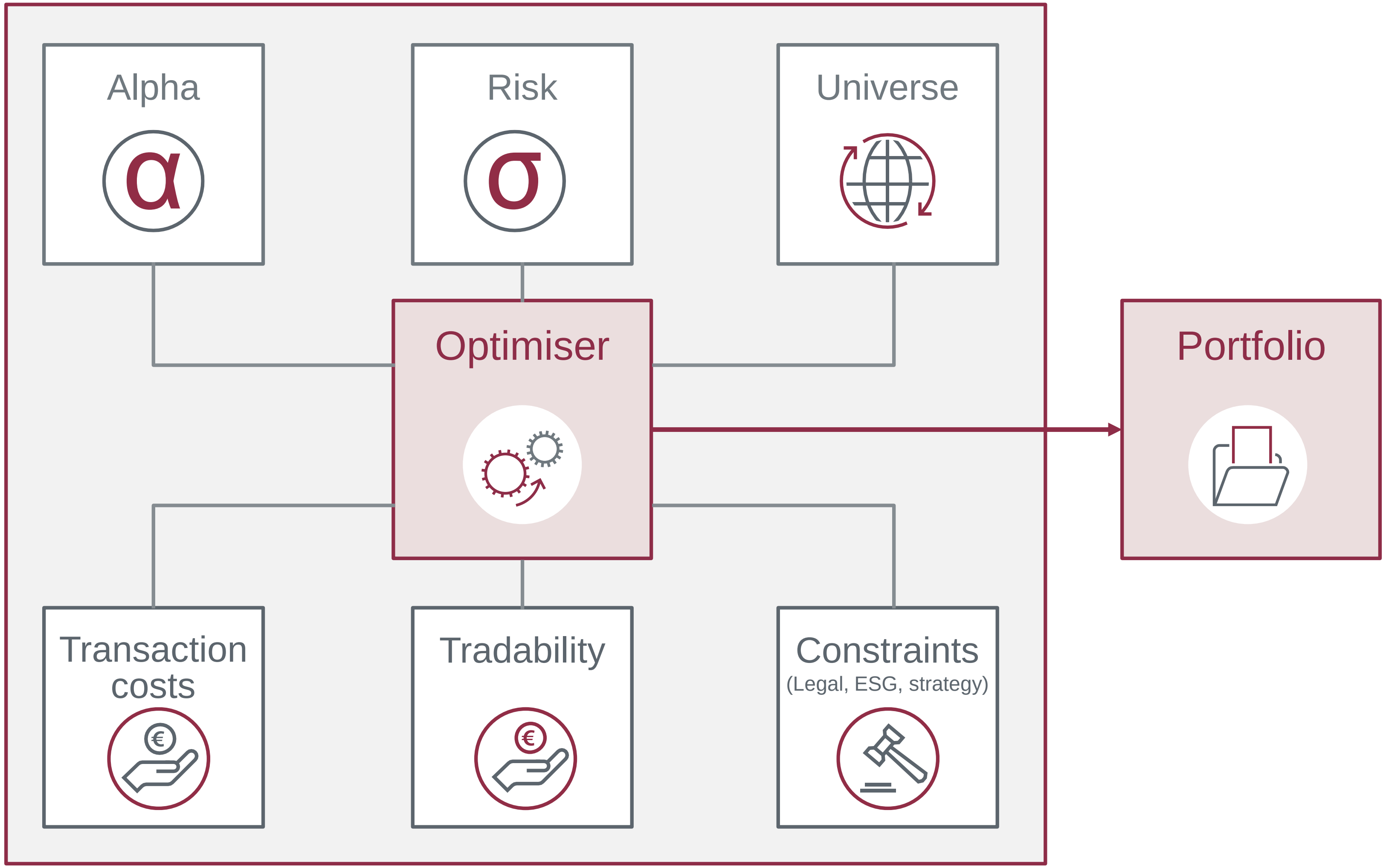


TE 2.36

August 2024

Commercial risk model (Axioma)

Equity management is a multi-dimensional problem
Portfolio construction using optimisation is the best possible solution



- Simultaneous consideration of investment goals
- Trade-off between signal, risk and costs is considered
- Process is repeatable and transparent
- Cross-portfolio constraints (tradable volume) can be considered
- Everything is customisable

ESG commitment:
Corporate governance and portfolio construction excellence

*requires additional mandate

- Fully integrated ESG management
  - Excludes controversial weapons and controversies, can implement customised exclusion lists
- Corporate governance
  - Quoniam exercises voting rights in investor’s best interests
  - Tailored agreements and engagement strategies with Union Investment (19 Analysts) to unlock advantages
  - Seamless regulatory compliance with customisable SI reporting
- Dynamic portfolio construction
  - Efficient implementation and ESG integration to mitigate unintended bets
- Innovative transformation offerings
  - Leveraging forward-looking ESG data for superior portfolio construction

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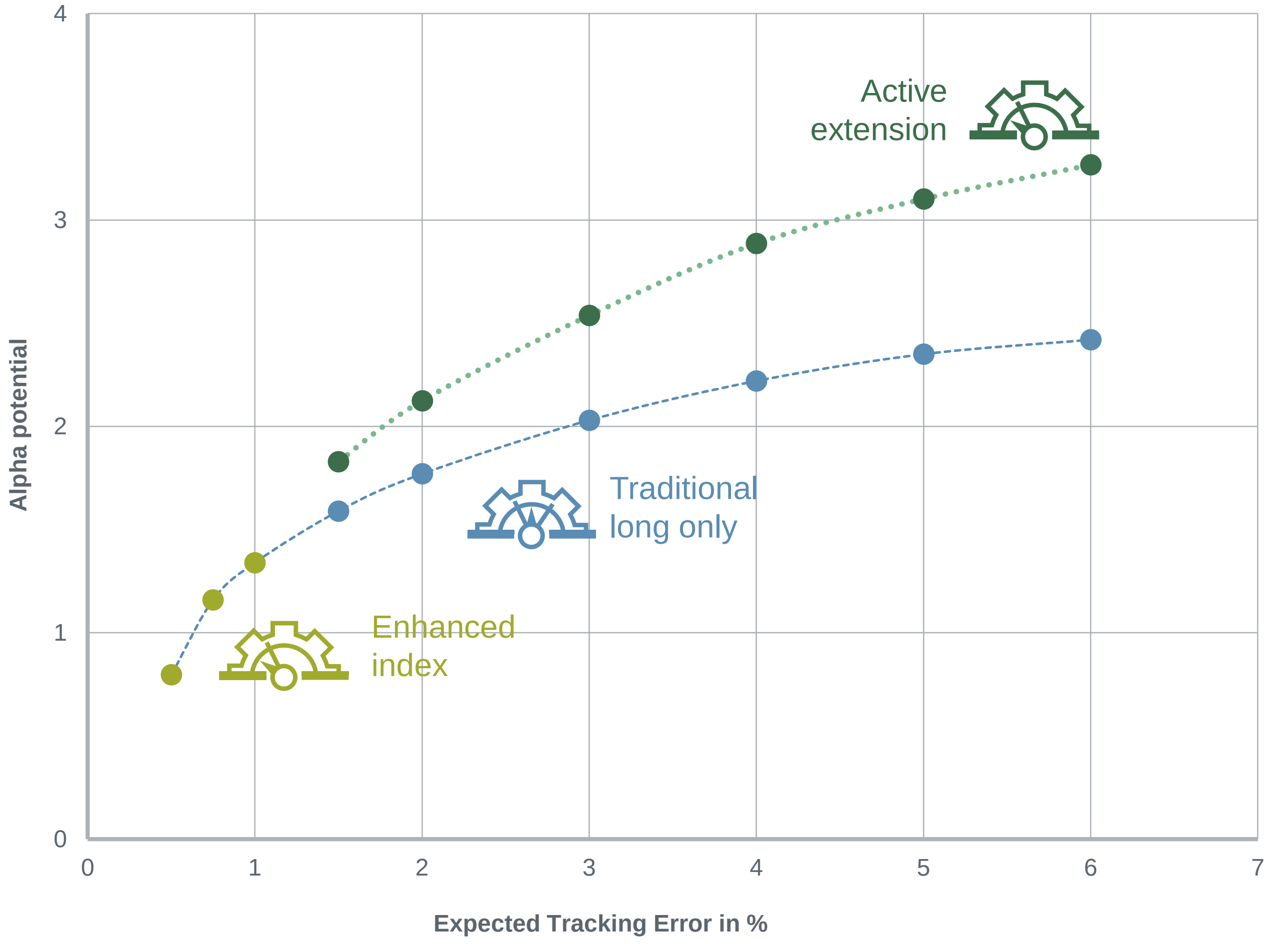
Enhanced index approach offers the highest potential information ratio over passive investing

What is the opportunity set?



Enhanced index for better risk-adjusted returns

- **Outperformance through alpha generation:**
  Through our alpha model we identify mispriced securities, improving returns beyond the benchmark index. The goal is to outperform passive strategies by actively tilting towards stocks expected to outperform.

- **Allows for a low tracking error.**
  This enables enhanced returns with minimal deviation from the benchmark's risk profile. small tilts relative to the index, exploiting market inefficiencies while maintaining

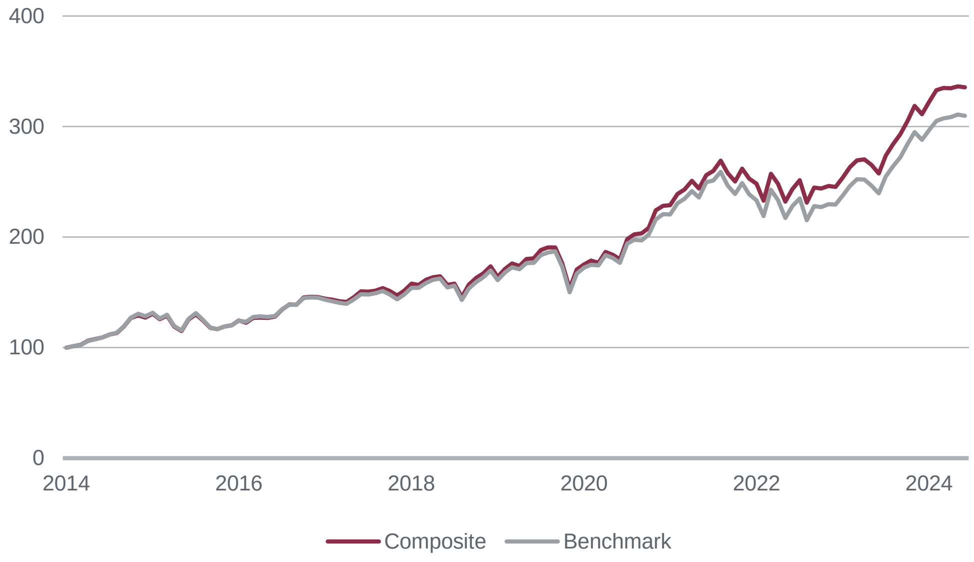
- **Cost-effective middle ground**
  between active management and passive indexing: We make fewer changes to the portfolio keeping costs lower while still seeking to add incremental alpha.

Source: Portfolio optimisations for MSCI World Benchmark, using standardised Alpha stock selection signal

Composite Performance overview EQ Enhanced Index Global

	Performance				Performance annualised			Volatility / TE		Risk adj. perf.	
	Current month	Current quarter	Current year	1 year	3 years	5 years	Since incept.	3 years	Since incept.	SR since incept.	IR since incept.
Composite	-0.23	-0.23	18.09	30.32	9.42	13.17	12.32	13.93	13.49	0.89	
Benchmark	-0.29	-0.29	17.31	29.38	7.46	11.89	11.47	14.23	13.63	0.82	
Alpha	0.06	0.06	0.78	0.94	1.96	1.28	0.86	1.18	1.19		0.72

Absolute performance



Composite: EQ Enhanced Index Global

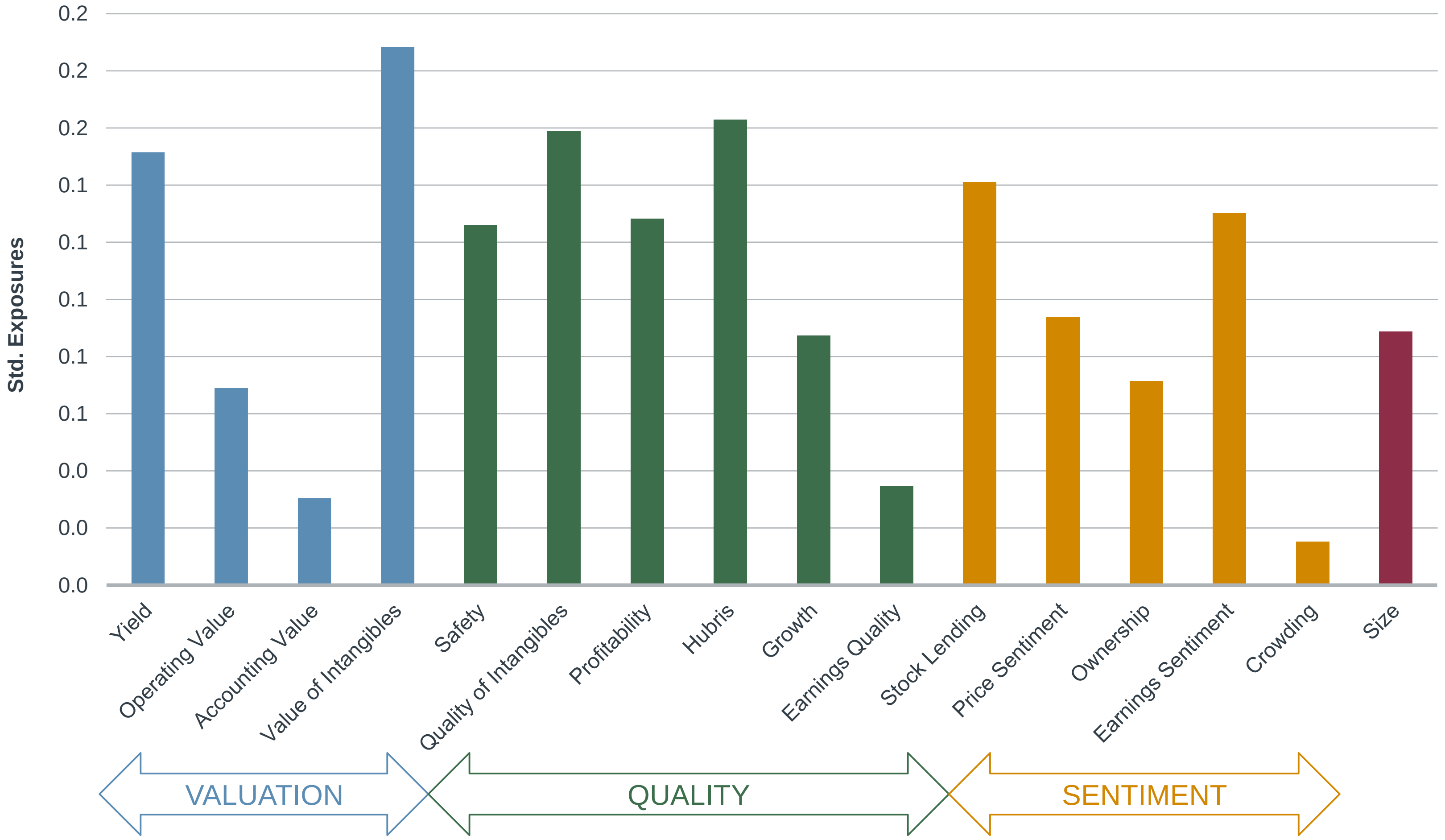
Calendar years

Year	Fund (gross)	Bench mark	Differenc e (gross)	Funds in composite	NAV in Mio. EUR
2014	13.40	13.44	-0.05	1	55.07
2015	9.94	10.42	-0.48	1	88.03
2016	11.57	10.73	0.85	1	88.12
2017	8.90	7.51	1.39	1	99.29
2018	-3.73	-4.11	0.38	1	100.38
2019	30.76	30.02	0.74	1	59.87
2020	6.23	6.33	-0.10	1	49.00
2021	32.86	31.07	1.80	1	65.22
2022	-14.14	-16.90	2.76	1	56.35
2023	22.96	22.66	0.30	2	230.22

Current Month:	October 2024	
First published:	2014-05-30	
Performance since:	2014-05-31	
Current volume:	0.207	bn EUR
Benchmark	50% S&P500 NR / 50% Stoxx 600 NR MSCI World Extended SRI 5% Issuer Capped MSCI World Standard	

Enhanced index style chart

Portfolio characteristics



Factor	Port-folio	Bench-mark
Price/Earnings	18.55	19.54
Price/Book	2.93	3.14
Dividend Yield	1.72	1.74
EV/EBITDA	14.60	15.92
Price/Cash Flow	18.69	18.48
Price/Sales	1.98	2.24
Return on Equity	22.00	20.80
R. on Assets (Cash)	23.97	22.06
Debt/Assets	13.38	16.44
Accruals (inverted)	3.49	3.42
IBES Up/Dn	2.56	-2.32
Earnings Moment.	4.50	4.20
Momentum	33.06	32.89
Beta 3 Years	1.04	1.04
Market Cap (FF)	627.96	603.05
Num. of stocks	214.00	644.00

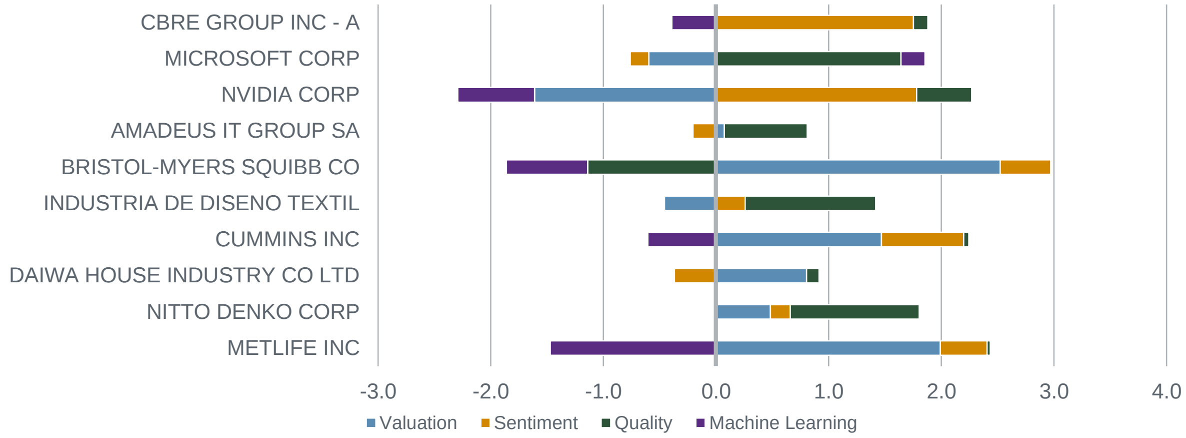
Date: 31.10.2024

Benchmark: MSCI World Extended SRI 5% Issuer Capped

Over and underweights

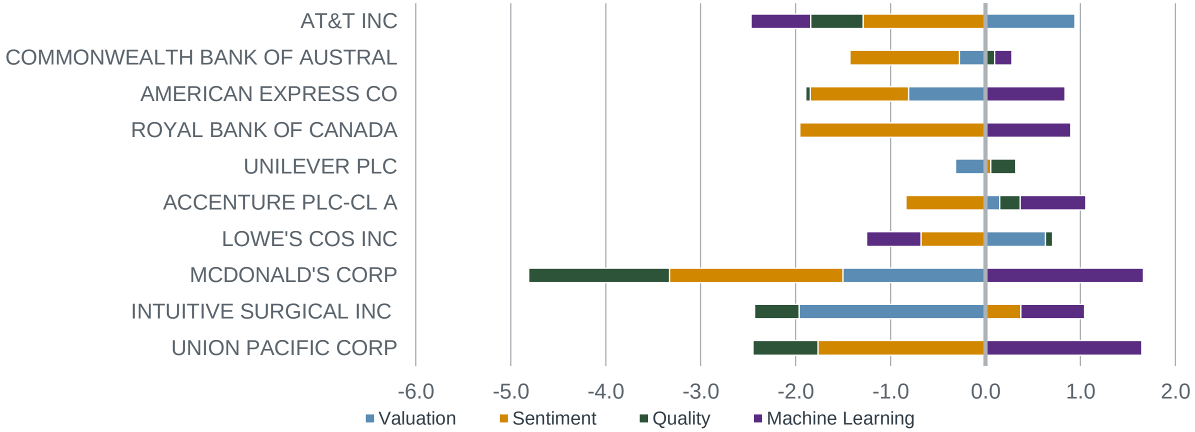
Top 10 overweights

NAME	Fund weight (%)	BM weight (%)	Act. weight (%)
CBRE GROUP INC - A	0.65	0.12	0.54
MICROSOFT CORP	5.24	4.77	0.47
NVIDIA CORP	5.67	5.21	0.47
AMADEUS IT GROUP SA	0.56	0.09	0.47
BRISTOL-MYERS SQUIBB CO	0.79	0.33	0.47
INDUSTRIA DE DISENO TEXTIL	0.64	0.18	0.46
CUMMINS INC	0.58	0.13	0.45
DAIWA HOUSE INDUSTRY CO LTD	0.49	0.05	0.44
NITTO DENKO CORP	0.47	0.03	0.44
METLIFE INC	0.57	0.14	0.43



Top 10 underweights

NAME	Fund weight (%)	BM weight (%)	Act. weight (%)
AT&T INC	0.00	0.47	-0.47
COMMONWEALTH BANK OF AUSTRAL	0.00	0.45	-0.45
AMERICAN EXPRESS CO	0.00	0.45	-0.45
ROYAL BANK OF CANADA	0.05	0.50	-0.44
UNILEVER PLC	0.00	0.44	-0.44
ACCENTURE PLC-CL A	0.19	0.63	-0.43
LOWE'S COS INC	0.00	0.43	-0.43
MCDONALD'S CORP	0.18	0.61	-0.43
INTUITIVE SURGICAL INC	0.10	0.52	-0.41
UNION PACIFIC CORP	0.00	0.41	-0.41



Date: 31.10.2024 Benchmark: MSCI World Extended SRI 5% Issuer Capped

Portfolio construction rules
Equities Enhanced Index Global

Universe

- **Research**
  15.000 (DM) Companies
- Benchmark: approx. 1500 stocks
- Quoniam PRI screening

Risk management liquidity constraints

- **Countries**
  ±1-1.5% relative to benchmark
- **Sectors**
  ±1-1.5% relative to benchmark
- **Single stocks**
  ±0.4-0.7% relative to benchmark
- **Liquidity**
  typically <30% des
  daily trading volume

Client restrictions

- Sustainability guidelines
- ESG integration
- Ethical considerations
- Regional emphasis

Disclaimer

The use of investment services as well as investments in financial instruments are conjoint with risks.
For more information and guidance on opportunities and risks, please visit www.quoniam.com/riskstatement

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