The evolution of ETFs to highly engineered solutions

August 2016

STOXX

STOXX 势拓

Swiss precision. German craftsmanship. Global focus.

1

Global index provider owned by Deutsche Börse

- STOXX is part of Deutsche Börse Group, one of the world's leading exchange organizations
- Deutsche Börse Group covers the whole trading process value chain with a wide spectrum of services
- STOXX runs a leading global index offering differentiating by innovation, quality and liquidity
- Headquartered in Zurich. Offices in Frankfurt, London, New York, Sydney and Tokyo

2

Global and innovative index universe

- Index offering covers 65 countries globally; wide product range used by more than 500 clients in 36 countries
- STOXX owned brands STOXX, iSTOXX and STOXX Customized, marketed brands include DAX indices

3

Core values: innovation, objectivity and transparency

- STOXX has been at the forefront of innovation since creating the market's first Eurozone blue-chip index in 1998 and has won many innovation awards
- All STOXX and DAX indices are fully rules-based, with rules disclosed in methodology guides

Global presence

Zurich and Frankfurt are headquarters for STOXX and Deutsche Börse

13 locations in Europe	9 locations in Asia / North America
Berlin[5)] Brussels[5)] Cork[5)] **Frankfurt / Eschborn**[2)] Leipzig[5)] London[3)] Luxembourg[5)] Madrid[5)] Milan[5)] Moscow[5)] Paris[5)] Prague[5)] **Zurich**[1)]	Beijing[5)] Dubai[5)] Hong Kong[5)] Singapore[5)] **Sydney**[4)] **Tokyo**[3)] Chicago[5)] New York[3)] Washington, D.C.[5)]

1) Headquarter STOXX (2) Headquarter Deutsche Börse (3) Joint office location STOXX and Deutsche Börse (4) Only STOXX office in this location (5) Only Deutsche Börse office in this location

1 ETF AS A PRODUCT SET

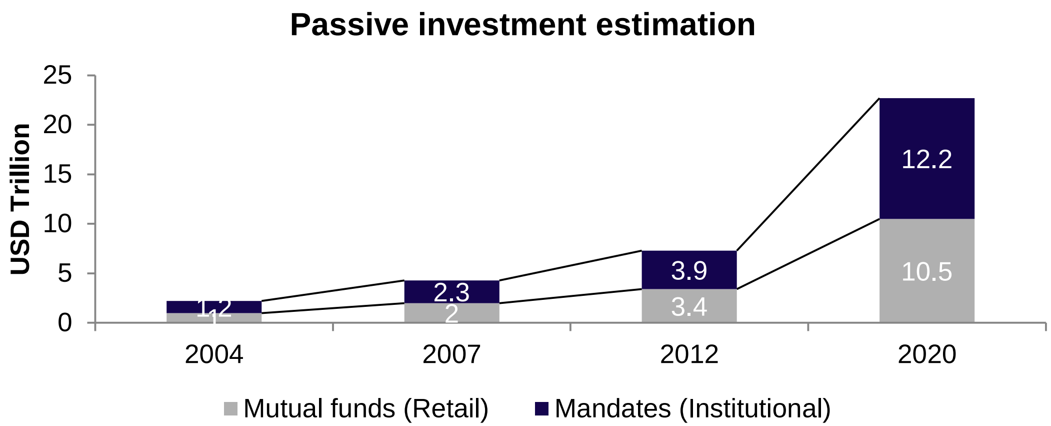
ETFs As A Product

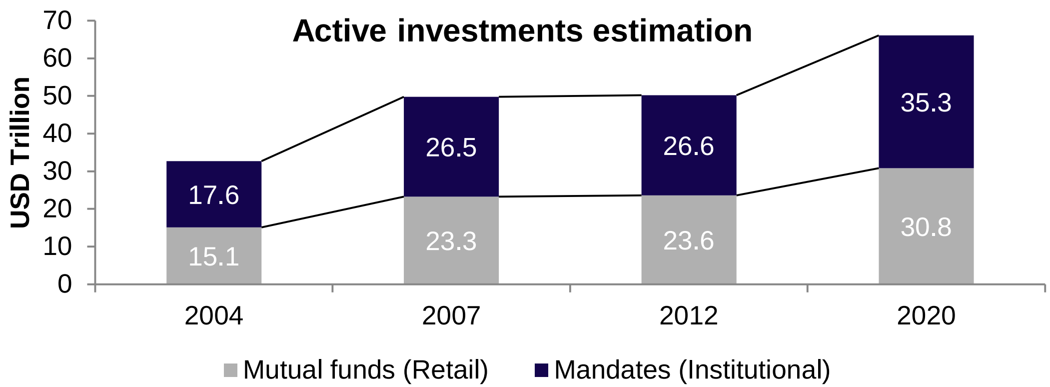
- Philosophically attractive – 'The Cleisthenes' of investing
- Transparency and price discovery
- Naturally robust
- Applications to wide client segments
- - Institutional
- - Intermediary
- - Retail
- Acceptance by active managers

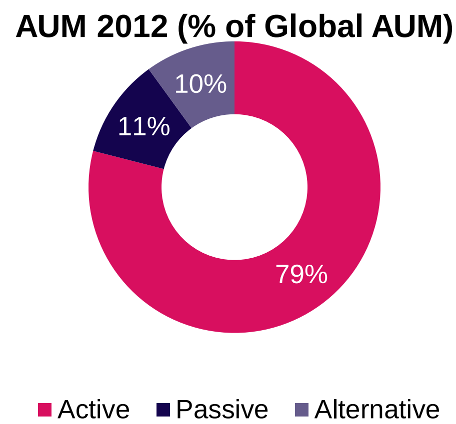
2 THE MOVE TO PASSIVE

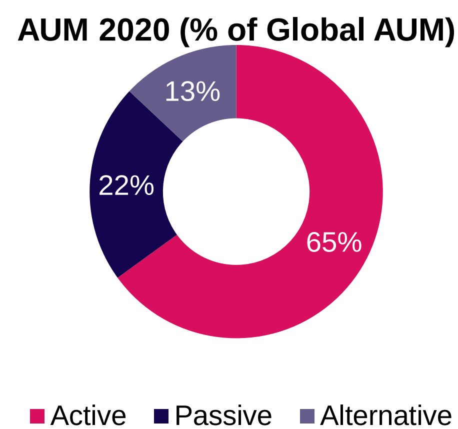
Proportion of passive assets expected to double by 2020
CAGR of 15.2% expected between 2012 and 2020

Primarily driven by the low yield, underperforming active managers and evolution of rules-based passive strategies





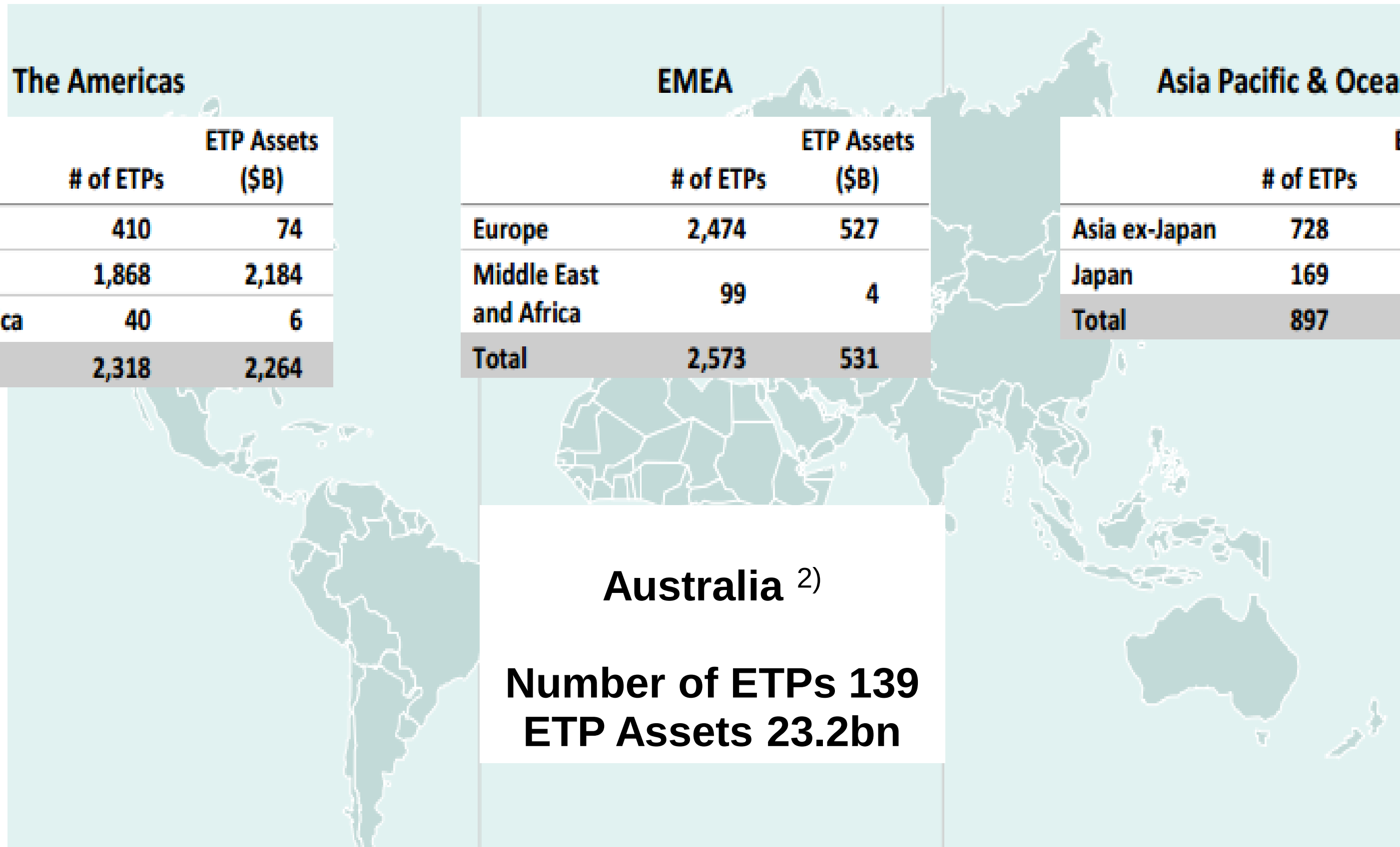




Source: PWC Research

Global & Australian ETP Market Overview

5,788 Global ETPs with $3 Trillion AuM[1)]



The Americas

	# of ETPs	ETP Assets ($B)
Canada	410	74
USA	1,868	2,184
Latin America	40	6
Total	2,318	2,264

EMEA

	# of ETPs	ETP Assets ($B)
Europe	2,474	527
Middle East and Africa	99	4
Total	2,573	531

Asia Pacific & Oceana

	# of ETPs	ETP Assets ($B)
Asia ex-Japan	728	66
Japan	169	140
Total	897	206

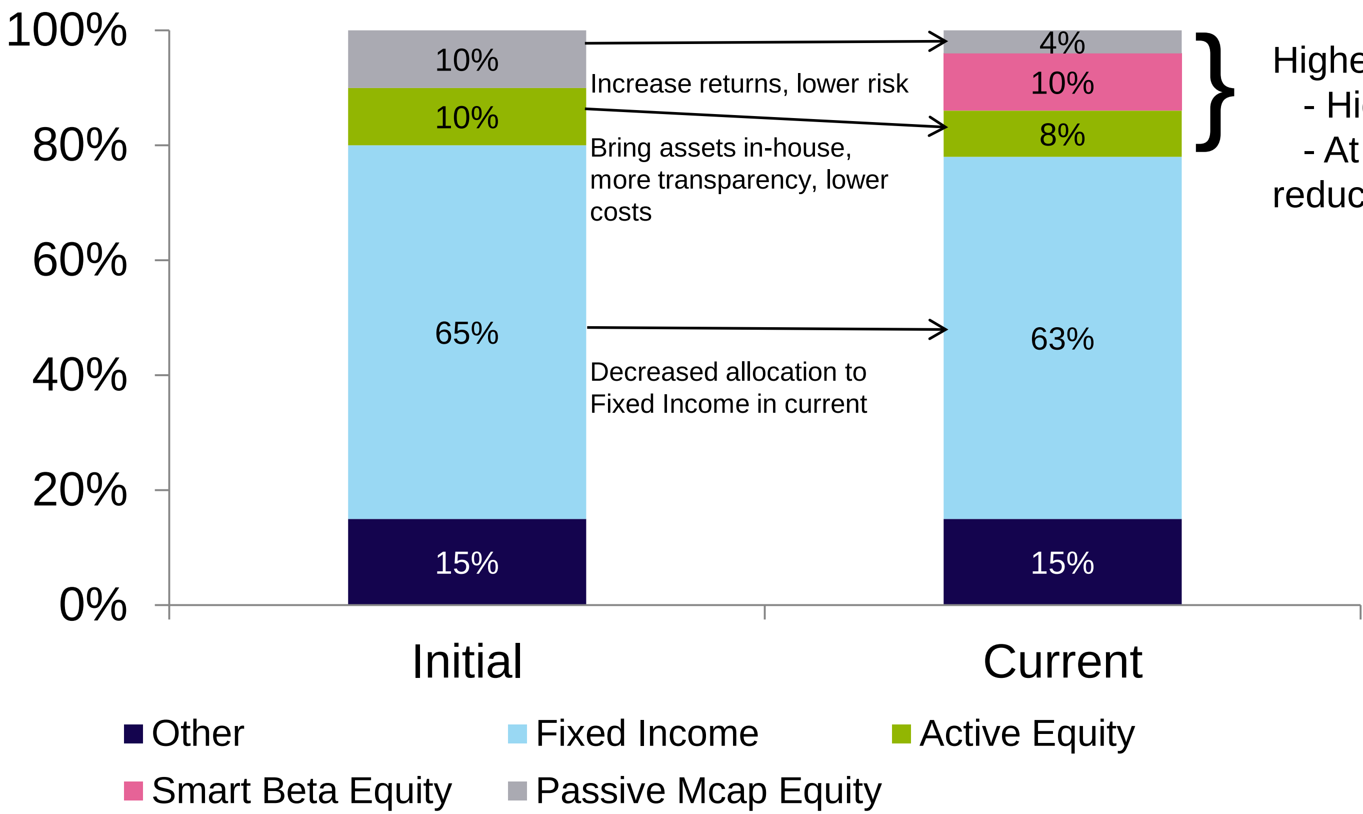
Australia [2)]

Number of ETPs 139
ETP Assets 23.2bn

1) Source: Morningstar, SSGA, as of 31 March 2016
2) Source: ASX Monthly Funds Report as of July 31, 2016

Addressing portfolio issues

Example of actual pension fund allocation changes[1)]



Higher Equity allocation:
- Higher long term expected return
- At the same risk (average risk reduced allowing higher allocation)

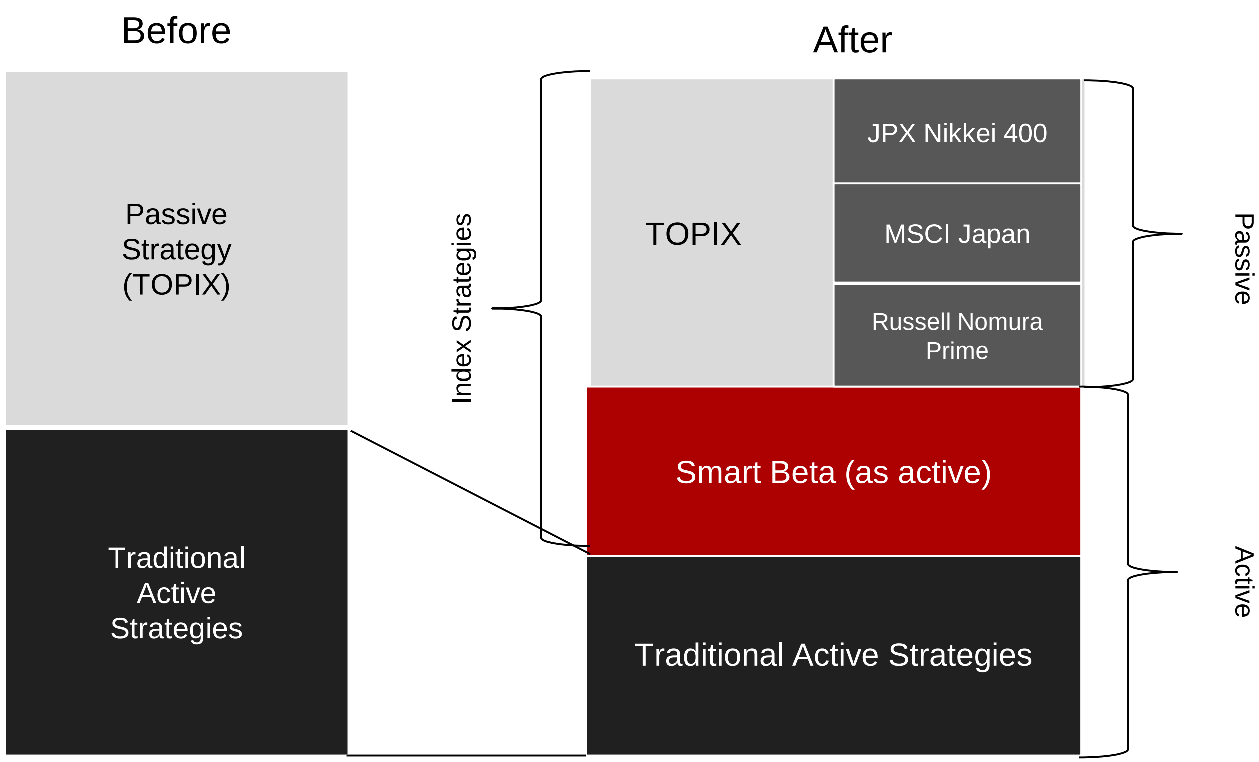
» Changes result in:
1. Higher expected return
2. Lower fees
3. More transparency
4. More in-house management
5. More control
6. Lower interest rate risk

» Further increases to Smart Beta Equity are planned at that pension fund

1) Approximate percentages, for legal reasons, asset owner name cannot be disclosed.
STOXX Minimum Variance Unconstrained was the major part of the Smart Beta allocation

Replacing traditional active strategies

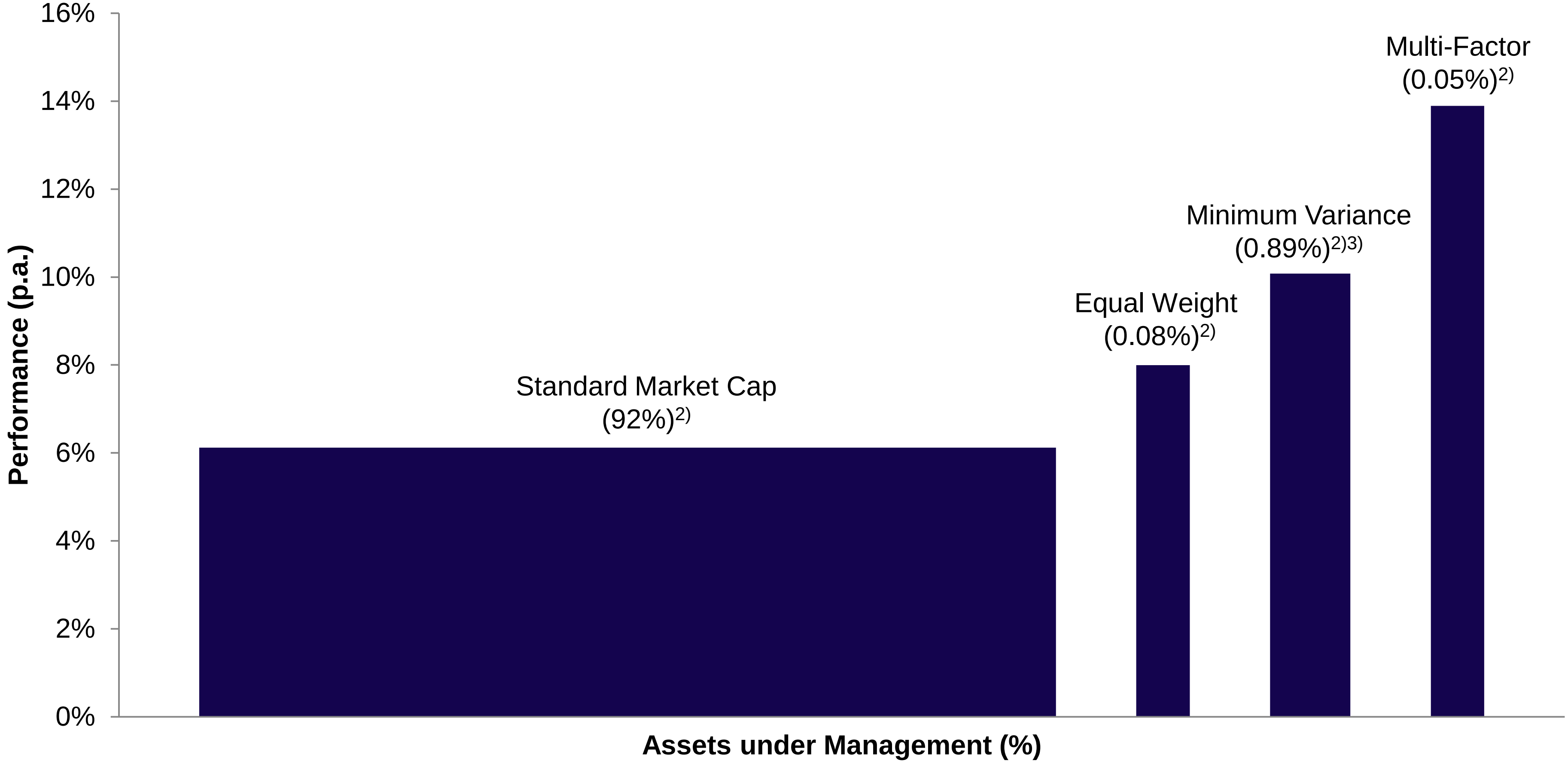
Smart Beta's adoption by GPIF, the world's largest pension fund



Source: GPIF

Do investors lose money by choosing the wrong underlying index?

Example: Dev. Europe / Index performance [10/2004-04/2016][1)]



1) Performance measured in EUR Net Return (NR) from 10/2004 to 04/2016.
2) Assets under Management (AUM) are based on ETFs listed on pan European equities. Cut-off date: 03/2016.
3) AUM also includes heuristic low volatility investments

Factor returns vary over time

In most of the eleven years observed, factor premia have found to have been positive

Crisis resilience

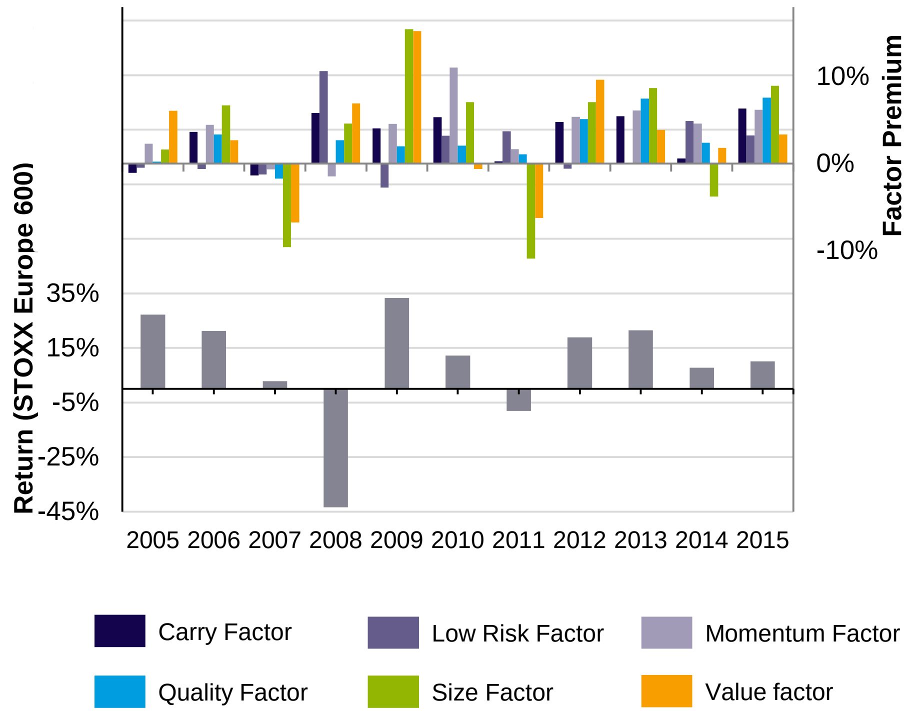
» 2007 Pre and during the GFC

» 2008 During the GFC

» 2009 -2012 The recovery phase

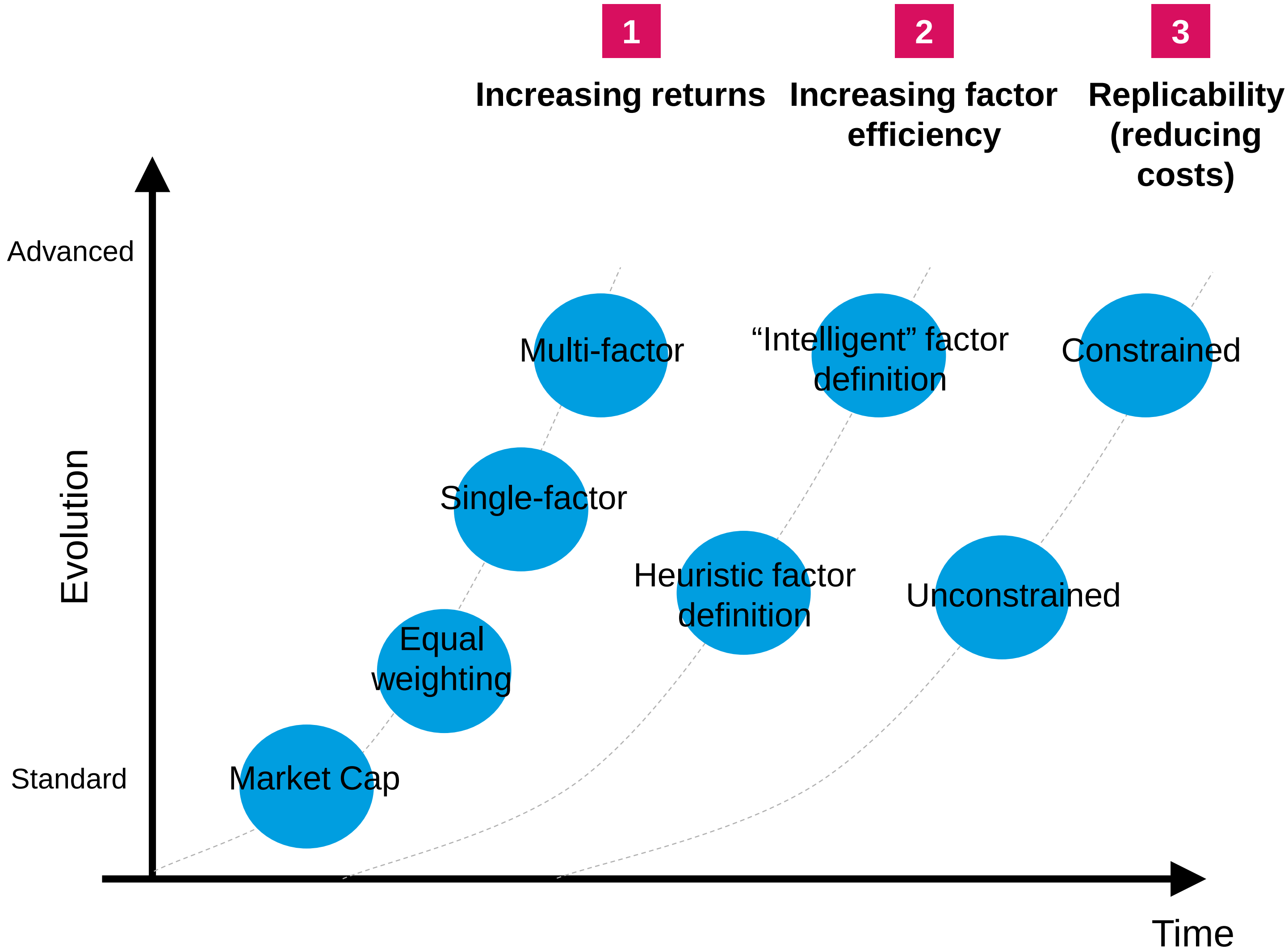
» What's next?

Annual factor vs STOXX Europe 600 returns [1)]



1) Annual excess returns of iSTOXX Europe Factor Indices over STOXX Europe 600 measured in EUR GR and annual return of STOXX Europe 600. Time period: Jan. 2005 – Dec. 2015.

The evolution of index concepts



Index design focuses on three areas

» Increase in returns (per unit of risk taken)

» Increase in efficiency or exploitation of factors

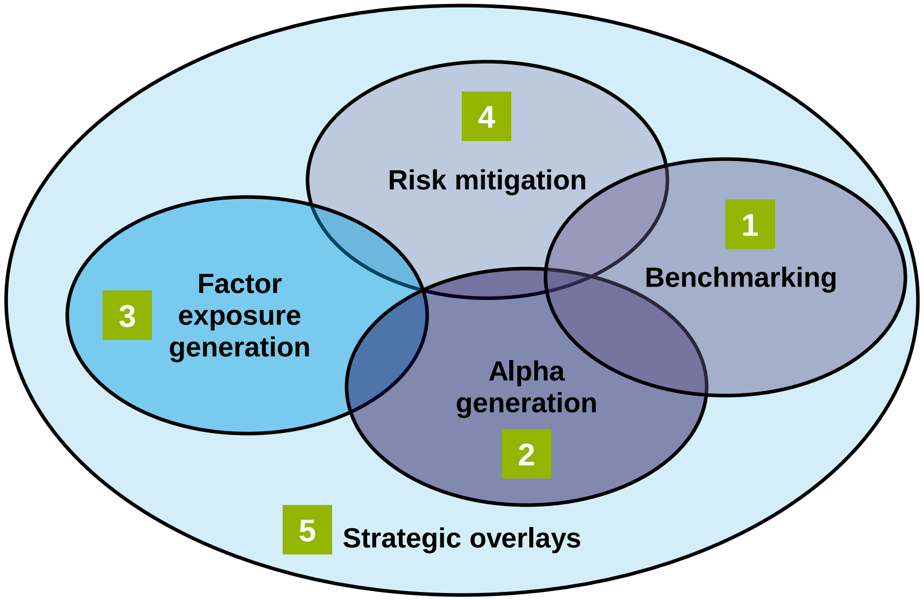
» Replicability of index concepts

STOXX's definition of Smart Beta

'Smart Beta indices are rules-based index strategies that deviate from a standard index approach in filtering, ranking/selecting or weighting **with the aim of generating a specific, desired benefit** to investors'

There are a range of motivations to use Smart Beta

The specific benefits can be clustered



Examples

1 Correctly benchmark and remunerate active managers by using appropriate reference index

2 Passively implement active strategies with the goal of generating alpha

3 Provide specific exposure to factors such as yield, value, quality, size or multi factor strategies

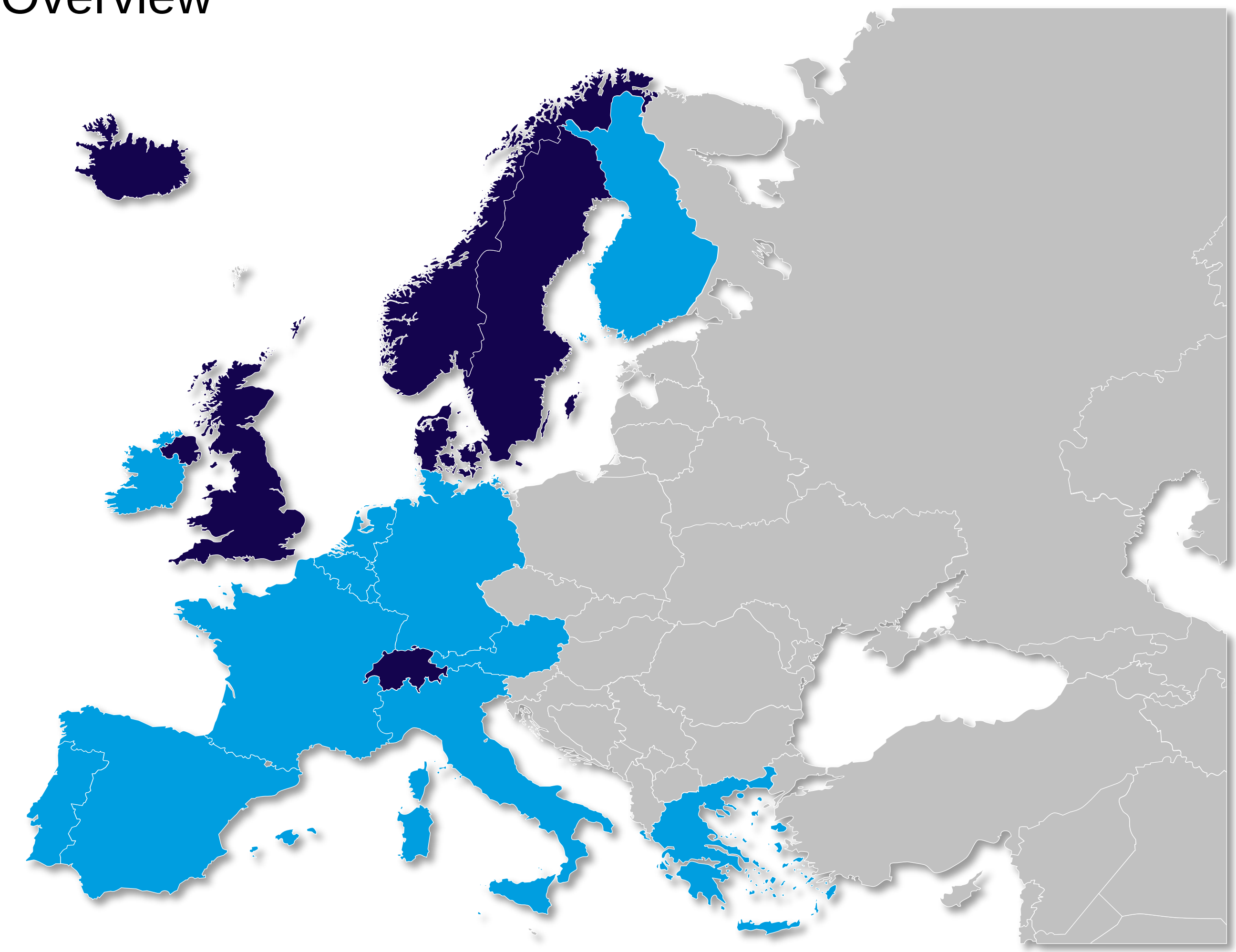
4 Manage different types of risks such as downside risk and tail risk

5 Customized solutions for investor portfolios

EVEN SOME BENCHMARKS ARE SMARTER THAN OTHERS….

The EURO STOXX 50® is the most well-known & used equity index for Europe

Overview



EURO STOXX 50 ®
- » 50 top companies from the Eurozone
- » 12 countries

STOXX Europe 50 ®
- » 50 top companies from the European Union
- » 12 + 6 countries

STOXX Europe 600 ®
- » Largest 600 companies from Europe
- » 12 + 6 countries

Methodology is unique and not only selecting the largest 50 stocks to ensure..

Universe	Sub-universes	Pre-selection	Selection	Weighting
» EURO STOXX (covers 90% of Eurozone free-float)	» 19 supersectors in the EURO STOXX universe	» For each of the 19 EURO STOXX regional Supersector indices, stocks are ranked in terms of free-float market cap. Largest stocks are selected jointly accounting for 60%[1)] of super free-float.	» Select 50 largest stocks as measured by free-float from all stocks thus selected	» Weight by free-float subject to 10% cap

» **Regular review**: Annually in September
» **Rebalancing**: Quarterly

1) More concisely, the maximum number of largest stocks as measured by free-float is selected such that the supersector market coverage still remains below 60%

3 SMART BETA ETF DESIGN

Smart Beta can be categorised into thematic and systematic approaches

Categorisation

Thematic	Alternate weighted	Fundamental	Risk premia
Demography	**Dividend**	**Quality**	**Minimum Variance**
Global infrastructure	**China A 50 Equal Weight**	**Strong Balance Sheet**	**Multi-Factor Strategy**
» Access to innovative benchmarks and investment themes	» Weighted by dividend » Equal weight all components	» Fundamental criteria applied as filters	» Full consideration of risk-related aspects » Sophisticated, but often complex optimizations

EXAMPLE 1: DIVIDENDS

Methodology matters

Considerations

» Very high dividends may indicate lack of profitable reinvestment ideas/opportunities

» High dividends are likely to persist where there is a track record of high dividends and where the underlying business is strong

» Dividend strategies have sometimes been reproached to be value strategies in disguise

Implications for dividend ETF investors

» **Avoid** companies with **excessive payout ratios**

» ETFs should only be investing in **profitable**, **quality companies** with a **strong track record of dividends**

» Investors should look at portfolio factor exposure. Arguably, excess returns of a high dividend portfolio should be driven **more by growth and quality than by value**

An extension to low volatility & high dividend – the correlation dimension

Description

- Stocks highly correlated together will be excluded from the base universe
- Aim is to diversify the risk, lower the drawdown and the overall volatility
- Low correlation screening, on top of the low volatility one, will reduce the risk and allow stronger exposure to the target stocks

The approach

- For each stock from the base universe, a correlation number will be calculated as;
  - The average correlation of the stocks with all other constituents of the base universe
  - Calculated on daily log returns in the currency of the final index
  - Over 12 months.
- Once the number is calculated, strategy picks up stocks whose average correlation is the lowest towards other security of the base universe
  - Even if those are from the industry or the same country.

Similarity of both strategies

Different factors – same structure

STOXX Global Select Diversification	STOXX Global Diversification Select

- Both indices start with the same benchmark; the STOXX Global 1800 Index
- The Diversification Select methodology includes a correlation step before the volatility step
- Both indices are composed of 100 of the highest dividend yield payer companies from the remaining universe

STOXX Global Select & Diversification Select 100 EUR Indices

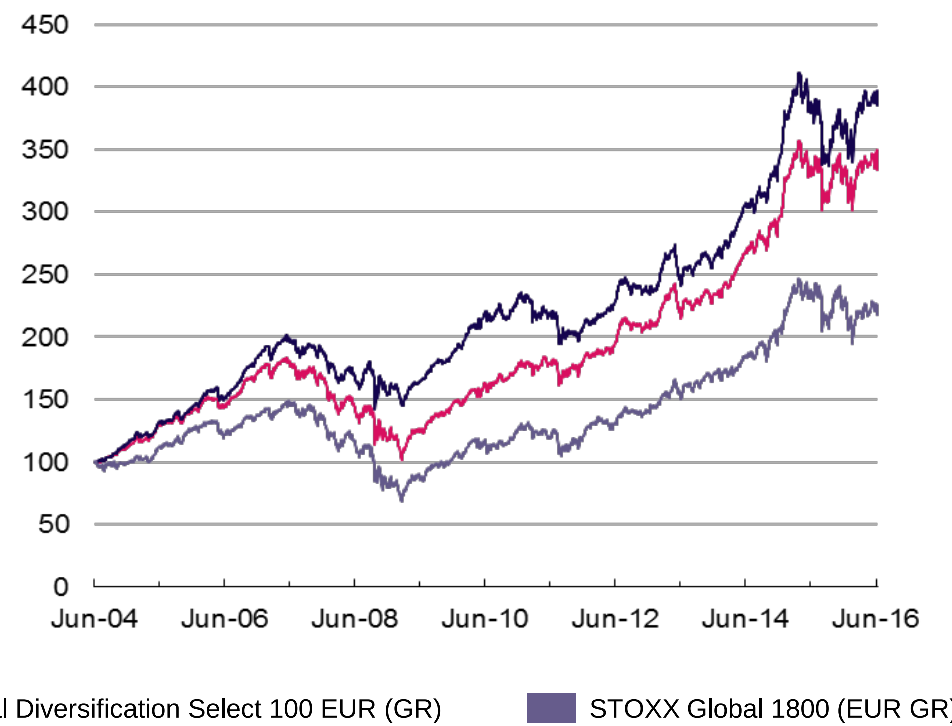
Based on the STOXX Global 1800

Performance

The two new indices outperform their parent index
- » Both risk & returns factors are improved
- » Sharpe ratio is more than doubled and so does the dividend yield

Key figures[1)]	STOXX Global Select 100	STOXX Global Diversification Select 100	STOXX Global 1800
Performance	10.6%	11.8%	6.8%
Volatility	12.2%	10.6%	15.5%
Maximum drawdown	44.6%	29.4%	53.7%
Sharpe ratio	0.8	1.0	0.4
Gross Dividend Yield	5.5%	4.6%	2.3%

Historical values



1) Source: STOXX backtested data as from Jun. 21, 2004 to Jun. 30, 2016. Annualized figures since inception. Sharpe ratio calculated by using the EONIA rate. Gross Dividend yield calculated as annualized performance since inception of the GR version minus the price version one

EXAMPLE 2: MINIMUM VARIANCE ETFS, THE LOW VOL CONFUSION

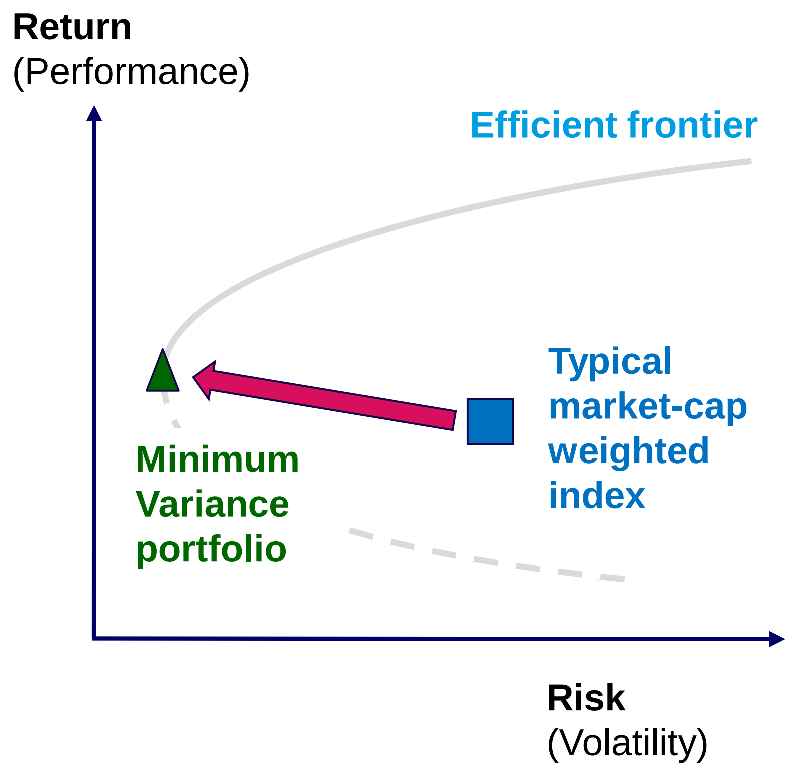
Minimum Variance is based on Nobel Prize winning Modern Portfolio Theory

Low volatility anomaly is an a well documented source of excess returns

Founder Harry Markowitz

- Founded in 1952, Markowitz's theory attempts to minimise risk and maximize return for a portfolio
- Markowitz's Efficient Frontier aims to offer the highest expected return for a given level of risk
- Minimum Variance indices aim to create an efficient portfolio with minimal volatility (risk)
- Investor interest in Minimum Variance has gained momentum during and after the 2008 financial crisis
- The minimum variance portfolio is the only one on the efficient frontier that does not rely on the estimation of asset returns
  - Asset returns are difficult to estimate with any reliability

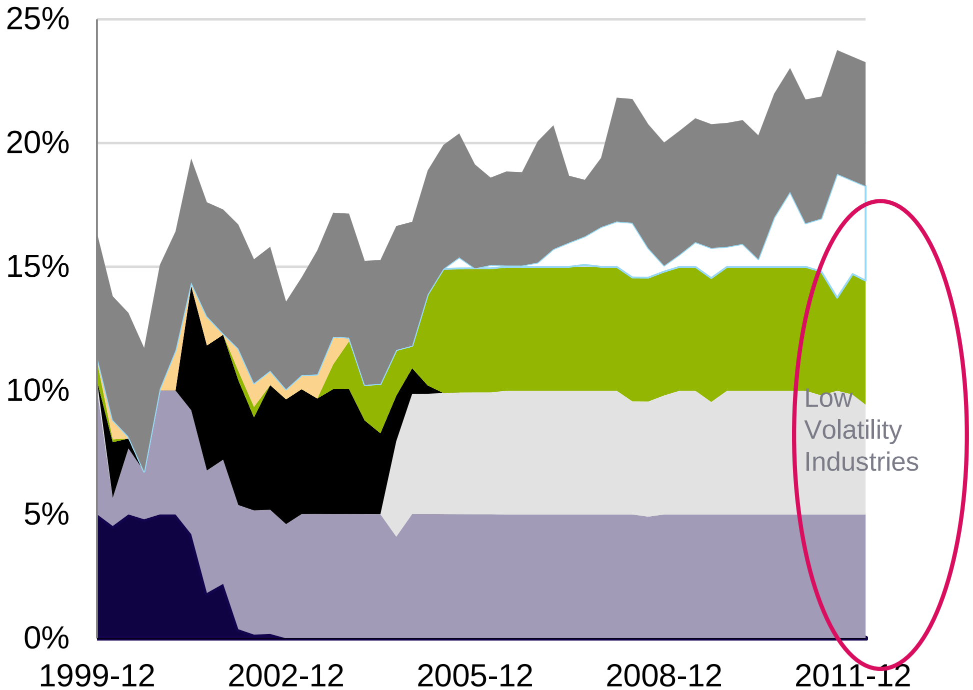
Risk-return optimization



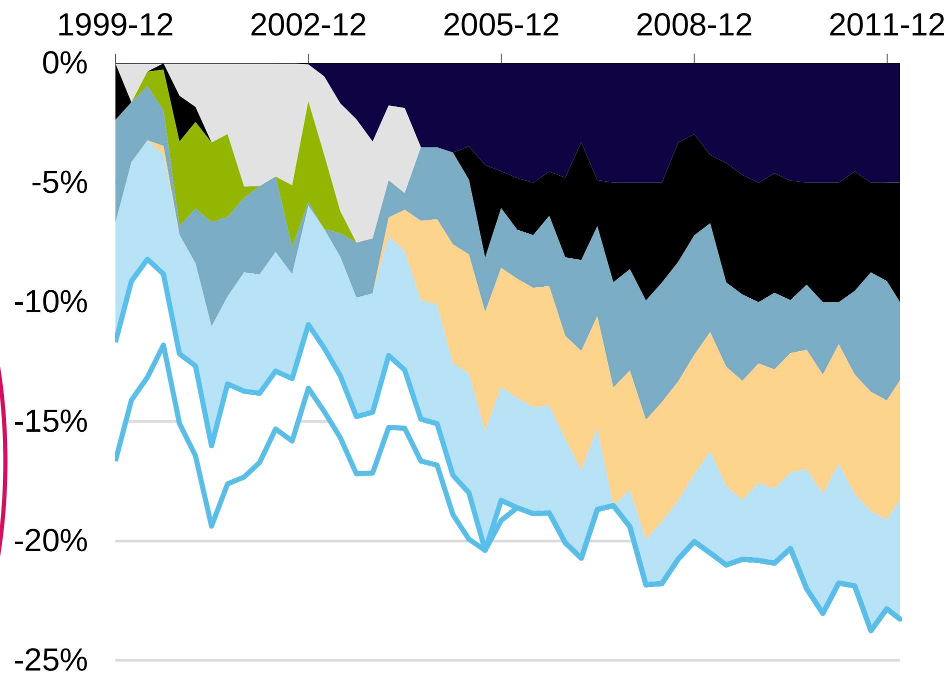
STOXX Global 1800 Minimum Variance Constrained shows stable allocation to traditional low volatility industries

Industry exposure

Positive exposure



Negative exposure

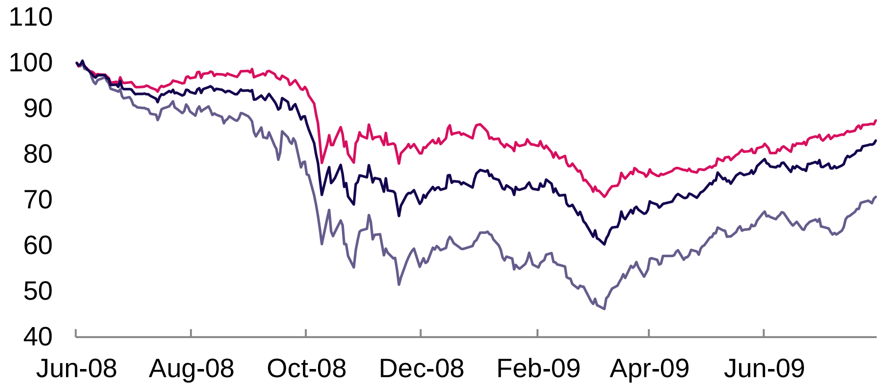


1) Source: STOXX data from 1999 to 2012. Industry classification according to DJ rules until mid 2004 and according to ICB rules since then

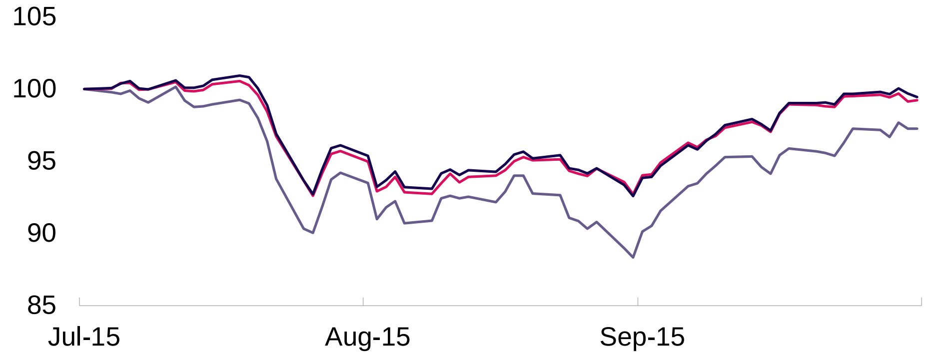
STOXX

Minimum Variance outperformed the market in past and recent market shocks

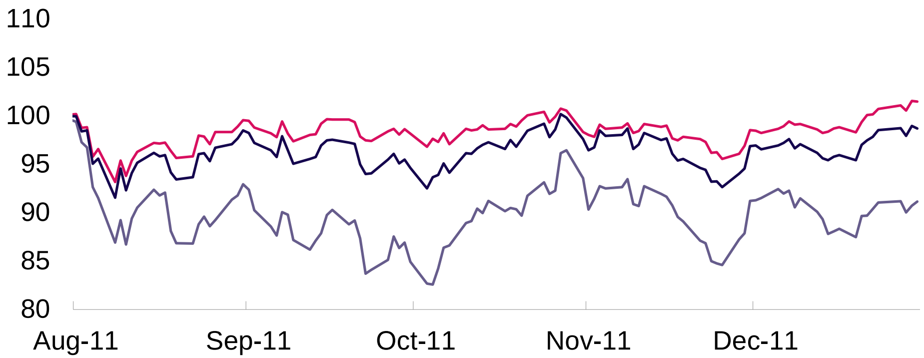
Global financial crisis (Jun 2008-Jul 2009)[1]



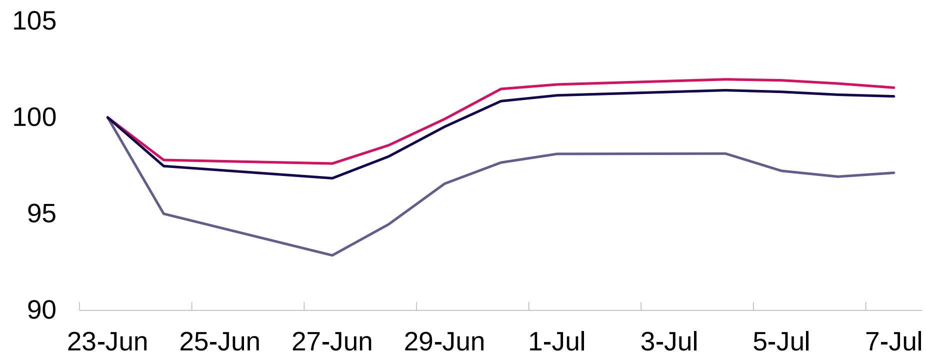
Market sell-off 2015 (Aug 2015 – Oct 2015)[3]



European debt crisis (Jul 2011- Dec 2011)[2]



Brexit referendum 2016 (23 June – 7 July)[4]

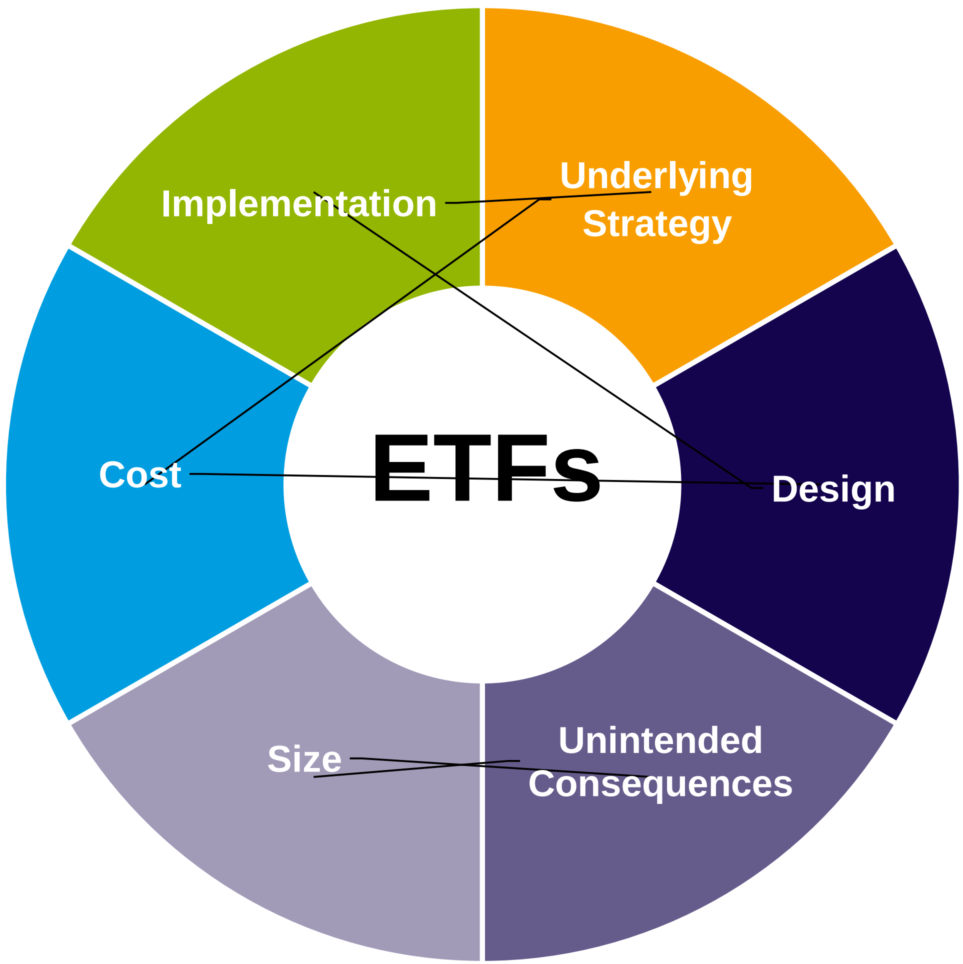


STOXX Global 1800 Min Var   STOXX Global 1800 Min Var unconstrained   STOXX Global 1800

1) Source: STOXX, daily data from Jun. 2, 2008 to Jul.31, 2009
2) Source: STOXX, daily data from July 31, 2011 to Dec.30, 2011
3) Source: STOXX, daily data from Aug. 3, 2015 to Oct.30, 2015
4) Source: STOXX, daily data from Jun. 23, 2016 to Jul.7, 2016

4 CONSIDERATIONS AND CONCLUSIONS

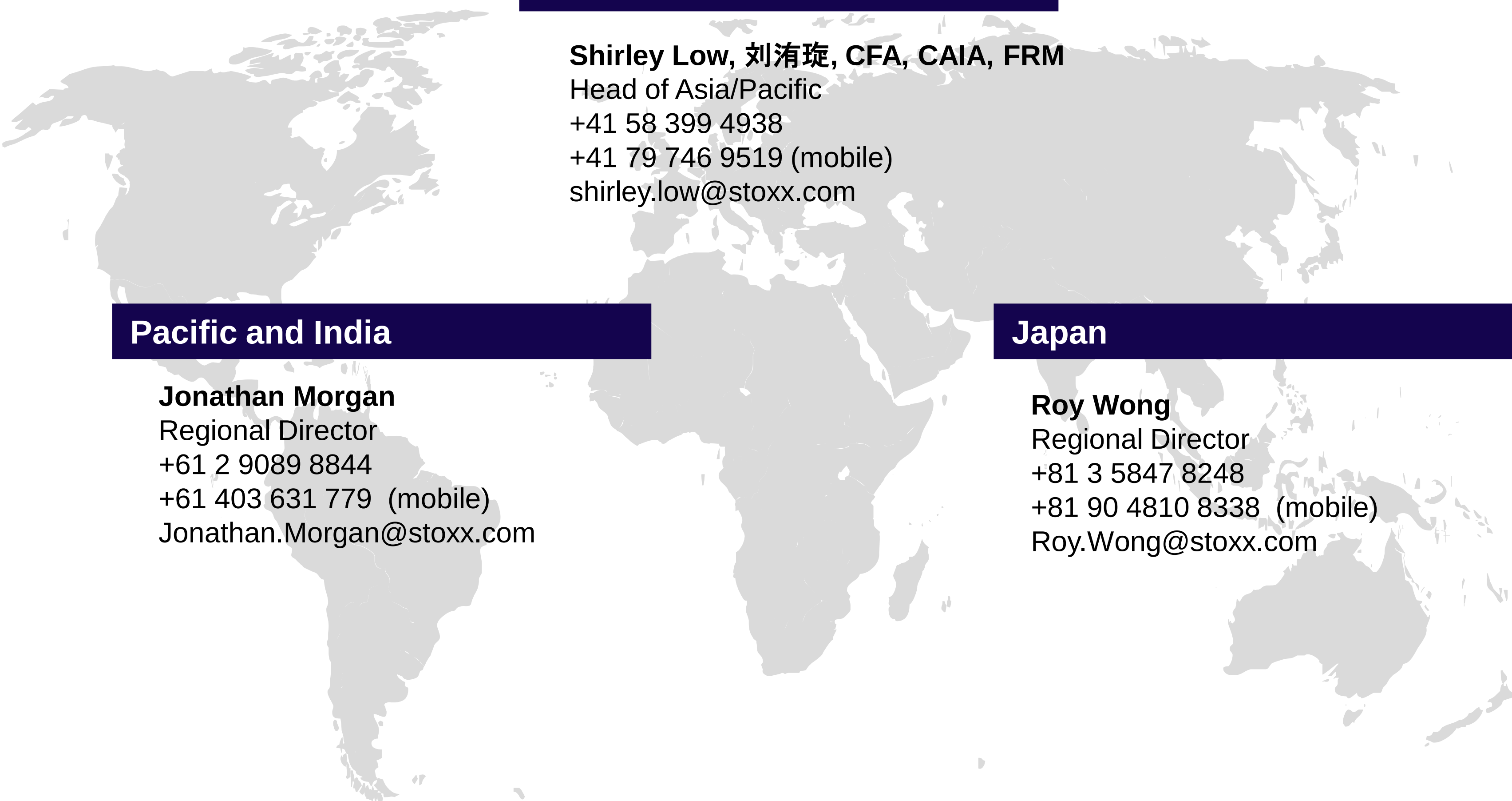
Considerations for Investors



Conclusions

- Market Cap and Smart Beta ETFs are here to stay
- Expect continued product expansion across asset classes
- Expect fee compression
- Don’t be blind to the opportunity set, but do ask questions as the ETF has to be fit for purpose

STOXX Asia contacts



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