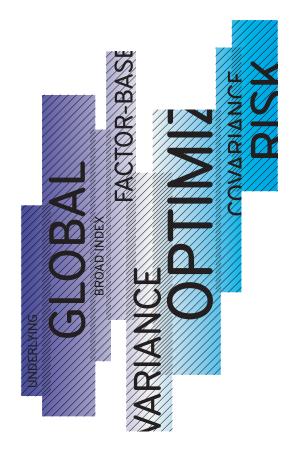# STOXX®
MINIMUM
VARIANCE
INDICES.

STOXX

INTRODUCTION.

The STOXX® Minimum Variance indices seek to minimize volatility using a consistently applied and rules-based methodology. The family of indices, which uses Axioma's factor model approach and covers broad global regions, offers two versions of every index to cater to a broad investor base.

» The unconstrained version offers a portfolio that may have very different attributes to the underlying STOXX index. This version, which is rebalanced monthly, is a unique offering in the industry as it creates an index that is not forced to mirror a benchmark.

» The constrained, or regular, version offers an improved version of the benchmark, creating an index similar to the underlying broad benchmark index but with reduced volatility. This version, which is rebalanced quarterly, is optimized with several constraints, with the aim of not straying too far from the underlying benchmark.

Both versions are created using a superior methodology, based on Axioma's factor model approach, which minimizes variance to create a stand-alone minimum variance strategy index family (unconstrained version) and a minimum variance improvement on market cap weighted benchmarks (constrained version).

The STOXX® Europe 600 Europe Minimum Variance Index's unconstrained version recorded an annualized return of 10.8 percent from December 29, 2000, to May 2, 2012. The constrained version recorded a gain of 8 percent. The STOXX® Europe 600 rose 0.3 percent in the same time period.

METHODOLOGY.

The exposure of each component in the underlying bench-mark index to several factors is calculated to help to minimize risk. After setting up the covariance matrix, optimization constraints are applied to create the two versions.

The constrained version applies several constraints based on Axioma's style factors – with the exception of size and volatility – to keep the index closer to the benchmark. Size and volatility are excluded because volatility is already accounted for in the factor analysis, and the size factor constraint is excluded because the components are of a similar size. Country and industry exposure are also used as constraints.

The unconstrained version has none of Axioma's style factors as constraints. It does not use country and industry exposure as constraints.

Both versions, however, have a few common constraints. These include component capping and a minimum limit for the effective number of assets at 30 percent of the underlying broad index. This makes the indices more robust and cuts idiosyncratic risk.

The following table outlines the differences between the two versions:

UNCONSTRAINED VERSION
CONSTRAINED VERSION

Monthly Rebalancing to ensure an optimal portfolio.
Maximum one-way turnover of 5%
Quarterly rebalancing like underlying broad indices.
Maximum one-way turnover of 7.5%

Enforce a minimum for effective number of assets at 30% of broad underlying index
Enforce a minimum for effective number of assets at 30% of broad underlying index

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Country, industry and factor exposures not applied
Country, industry and factor exposures applied. Factors analyzed include value, growth, short-term and medium-term momentum, leverage, liquidity and exchange rate sensitivity. For the factors, the index is constrained to be within a 0.25 standard deviation of the base index's exposure to each factor. For the country and industry constraints, the exposure of the minimum variance index has to be within 5% of the underlying index

Component capping requires that a component may have a maximum of 10%
Component capping follows 4.5%/8%/35% to ensure UCITS Compliance. A component cannot have a weight of more than 8%, and the sum of all those with an individual weight of at least 4.5% cannot exceed 35%

Index may not follow the broader STOXX index closely
Index is developed to more closely follow the broader STOXX index

■ Unconstrained ■ Constrained

INDICES

REGIONAL INDICES:
» STOXX® Global 1800 Minimum Variance
» STOXX® North America 600 Minimum Variance
» STOXX® Asia/Pacific 600 Minimum Variance
» STOXX® Europe 600 Minimum Variance
» EURO STOXX® Minimum Variance
» STOXX® Global 3000 Minimum Variance*
» STOXX® BRIC 400 Minimum Variance*

COUNTRY INDICES:
» STOXX® Canada 240 Minimum Variance
» STOXX® USA 900 Minimum Variance
» STOXX® Australia 150 Minimum Variance

KEY FACTS.

RISK RETURN OPTIMIZATION

» Minimum variance optimization shows consistently stronger performance, while minimizing risk
» Fewer shares required to generate the portfolio, offering investors the possibility to achieve a much better risk profile without the need to trade all components of the broader index

BROAD INVESTOR USE

» Indices are an ideal fit for financial products such as exchange-traded funds (ETFs), or can serve as benchmarks for actively managed funds
» Turnover and transaction costs considered in the optimization process

ACCURATE, UNIQUE

» An exhaustive set of relevant factors was taken into account to create the covariance matrix, so ensuring accuracy in the creation of the risk-optimized portfolio
» A superior methodology that is more effective at predicting and reducing risk
» Axioma's factor-model approach calculates multiple comparable views of risk daily for the index

TWO VERSIONS, GLOBAL REACH

» Every index in the family has two versions – constrained and unconstrained – to cater to different investor needs
» STOXX is the first provider to apply minimum variance extensively to global regions and countries
» The unconstrained version offers a first-of-its-kind index for a true minimum variance mandate

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