STOXX MINIMUM VARIANCE INDICES Q&A

What is minimum variance as an investment strategy and why is it important today?

A minimum variance strategy aims to cut the risk of a portfolio and essentially improve its long-term risk-return profile by optimizing the weights of the components with regards to the overall risk of the portfolio. A minimum variance portfolio essentially allows investors to access similar or better returns compared to the standard market-cap weighted portfolio at much lower risk levels. From a risk budgeting perspective, this means that investors need to "spend" less of their risk allowance on this portion of their asset allocation while still maintaining access to the returns. While minimum variance strategies have been around for two decades, market turbulence and increased focus on the amount of risks taken on during the past few years have generated increased attention to this approach of investing.

Minimum variance is based on Harry Markowitz's Nobel Prize winning Modern Portfolio Theory (MPT), created in the 1950s. MPT proposed that variance should be used a measure of risk to evaluate stocks, adding that portfolio variance depends on covariance among the constituents of the portfolio. More than half a century later, MPT's "efficient frontier" – which shows the best return that can be expected for a given level of risk – is still guiding investors to set up portfolios that minimize risk.

What does the STOXX Minimum Variance index family try to achieve for the investor?

The STOXX Minimum Variance Indices give investors a unique and superior family of indices to access the full benefits of a minimum variance based investment strategy in an unconstrained manner. The indices are constructed based on the market leading optimization, factor and risk models provided by the index partner Axioma. Based on these models, the STOXX indices offer the first unconstrained access to a minimum variance strategy, which allows the optimized portfolio to make full use of the optimization opportunities. Existing approaches to minimum variance indexing have been strongly constrained to remain close to their original benchmark with regards to risk exposures.

The optimization performed by Axioma itself provides robust and stable results thanks to Axioma's risk model, which is updated daily and contains Axioma's proprietary Dynamic Volatility Adjustment (DVA) technique to reduce 'volatility lag'. The new family provides minimum variance exposure for all major regions and broad portfolios beyond the coverage of existing offerings. The optimization approach uses the most up-to-date modeling techniques and therefore differs strongly from the more simplistic approaches based on historical data only and have been around since 2007.

What are the advantages of the STOXX Minimum Variance index family against similar offerings already in the market?

Majority of the minimum variance indices that are available use simpler methodologies, such as historical covariance or a weighting of components inversely to their volatility. In addition, these offerings are limited in geography and do not offer an optimization based on a factor model approach. Factor based indices are strongly constrained, producing an index very similar to the benchmark.

STOXX on the other hand offers two versions of each index. Our unconstrained version indices offer investors the only opportunity available in the market to track an index that has the freedom to be an integral part of a true minimum variance strategy as it is not bound to its original benchmark.

For investors, who seek close correlation to the original benchmark, STOXX also offers a constrained version of the indices.

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Why is STOXX releasing a family of minimum-variance indices at the present time?

Investor appetite to manage volatility has increased by leaps and bounds in the past few years due to turbulent markets and a bleak macroeconomic outlook. The financial industry is increasingly prioritizing risk reduction above return maximization. Investors still want to win but by losing less. The willingness of clients to adopt sophisticated models to cut risk has gone up in the past few years, and clients themselves have become more sophisticated about managing risk.

Our family of minimum variance indices is being launched at a time of increasing demand for low-risk benchmarks and strategies. We are offering clients an outstanding index family that matches their expectations and caters to their sophistication. At the same time the opportunity to partner with Axioma allows STOXX to provide a truly superior offering to meet current market demands.

Why are factor-based models superior to regular optimization?

A factor based model, such as the one Axioma has developed and we have used to create our minimum variance indices, helps to massively reduce the complexity of the necessary computation for the optimization as it measures each component against fewer parameters which have in turn more information. Creating a covariance matrix based on historical data of say 600 components against each other to design a minimum volatility portfolio creates a large number of variables (around 180k), leading to a high likelihood of unstable or local and hence not actually optimal optimization results.

A factor-based model measures the 600 components against a few factors, creating a more robust result. Axioma's model uses seven main factors - value, growth, medium-term momentum, short-term momentum, leverage, liquidity and exchange rate sensitivity. Axioma's model also allows for the easy introduction of factor-based constraints in the optimization stage to create a minimized risk profile for the target portfolio.

What is the methodology used in the STOXX Minimum Variance indices?

Each Minimum Variance Index is based on a base index, for example the STOXX Europe 600 and calculates the exposure of each component to Axioma's style factors. Using factor based optimization the two index versions are created by applying a different set of constraints:

For the STOXX constrained version, enforced restrictions are enforced with the aim of staying close to the underlying index. This is based on the Axioma style factors – excluding size and volatility - as constraints. In addition country and industry exposure are introduced as constraints. This version is constrained to be within a quarter standard deviation of the base index's exposure to each of the constraint categories. These restrictions, were made to keep this version closer to the underlying index.

The unconstrained version does not constrain the optimization with regards to the industry or factor exposure of the resulting index.

One thing to remember is that both versions do have some common implementation related constraints which were introduced during the optimization in order to ensure easy replication of the strategy. These constraints - component capping and enforcing a minimum on the effective number of assets to 30 percent of the underlying index - additionally make both versions more robust and to cut idiosyncratic risk.

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What are the differences between the constrained and unconstrained versions of the STOXX Minimum Variance indices?

The constrained version of the STOXX Minimum Variance Index does not stray too far from the underlying index, minimizing tracking error of realized returns for investors. The constrained version does not have a large bias toward a certain sector or factor, such as momentum, or other industry or country exposures, making it optimal for investors looking for a risk minimized version of an existing benchmark. The idea is to offer an improved version of the benchmark with reduced volatility based on a state-of-the-art factor model developed by our partner Axioma. The constrained version also rebalances quarterly, in line with the underlying index.

The unconstrained version is unique in that it leads to a risk-optimal portfolio that may be biased toward a specific factor, industry or geography as it has fewer limitations. The freedom of this version makes it a good choice for investors seeking a minimum variance strategy who are not concerned about following an underlying benchmark index too closely. The unconstrained version rebalances monthly.

You launched an iSTOXX Europe Minimum Variance Index last year? What is the difference between that and the STOXX Minimum Variance indices?

The iSTOXX Europe Minimum Variance Index seeks to minimize the volatility of the STOXX Europe 600, based on historical price data, using historical covariances to estimate volatility. The STOXX Minimum Variance indices use Axioma's factor-model approach and will cover several regions and countries. Indices covering five regions have been introduced and further regional and country-specific indices will be unveiled within a few weeks. All indices will be available in both versions.

What is the performance history of some of the indices in the STOXX Minimum Variance family? And is the performance better than other minimum variance indexes or other benchmarks?

Below is a list of the performance history of some of the regional indices in the STOXX Minimum Variance index family:

	STOXX Global 1800	STOXX Min. Var.	STOXX Min. Var. Unc.
Annualized returns	-1.0%	8.3%	8.7%
Volatility	17.8%	10.8%	8.7%
Sharpe ratio	-0.06	0.77	1.00

Source: STOXX, from 31.12.1999 to 05.05.2012

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	STOXX Europe 600	STOXX Min. Var.	STOXX Min. Var. Unc.
Annualized returns	0.2%	5.0%	4.3%
Volatility	21.3%	13.6%	13.9%
Sharpe ratio	0.01	0.37	0.31

Source: STOXX, from 02.01.2001 to 05.05.2012

	STOXX North America 600	STOXX Min. Var.	STOXX Min. Var. Unc.
Annualized returns	-0.9%	8.1%	8.5%
Volatility	23.3%	14.7%	12.2%
Sharpe ratio	-0.04	0.55	0.69

Source: STOXX, from 31.12.1999 to 05.05.2012

	STOXX Asia/Pacific 600	STOXX Min. Var.	STOXX Min. Var. Unc.
Annualized returns	-1.9%	4.5%	10.7%
Volatility	21.0%	14.9%	11.4%
Sharpe ratio	-0.09	0.30	0.94

Source: STOXX, from 31.12.1999 to 05.05.2012