

# MSCI MINIMUM VOLATILITY INDEXES

TRACK BROAD MARKET RETURNS WITH LOWER RISK

- The MSCI Minimum Volatility Indexes are uniquely designed to capture the low volatility effect.
- The MSCI Minimum Volatility Indexes are constructed to (1) experience the lowest total risk, (2) avoid unintended bets on countries, sectors and styles, and (3) provide superior risk-adjusted performance while maintaining the investability and replicability features of the parent cap weighted indexes.
- Uses for MSCI Minimum Volatility Indexes include cost-effective replication, benchmarking of low volatility managers, and creating combinations of MSCI Minimum Volatility with other MSCI Factor Indexes.

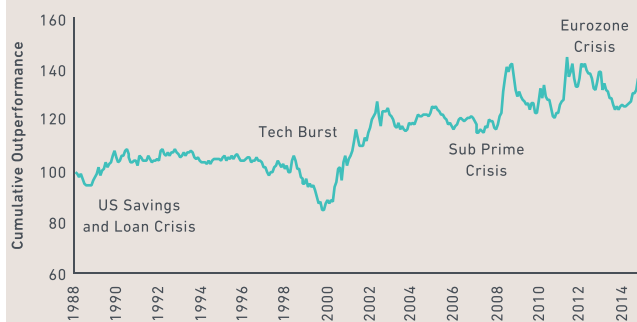
## WHY DO INVESTORS USE MINIMUM VOLATILITY STRATEGIES?

- Reduction of portfolio volatility—on average by 25% to 30%—and lower drawdown compared to the broad market
- De-risking the portfolio while keeping an exposure to equity markets
- One of few strategies that aims to outperform the broad market in adverse market conditions

## KEY BENEFITS OF THE MSCI MINIMUM VOLATILITY INDEXES

- Accounts for multiple risk sources and has achieved effective risk reduction via high level of diversification
- Longest industry live history—beginning in April 2008
- Designed to avoid unintended country, sector and style bets
- Low annual index turnover of 20% to reduce replication cost
- High investability and replicability

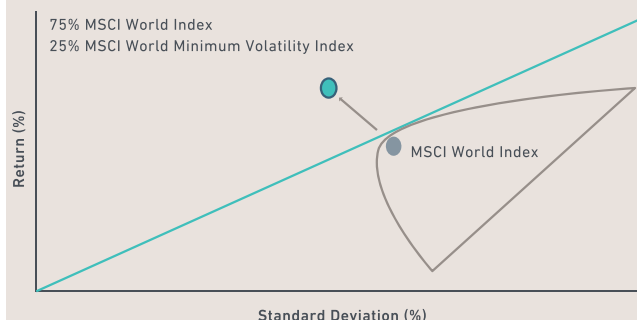
## PERFORMANCE OF MSCI WORLD MINIMUM VOLATILITY INDEX RELATIVE TO MSCI WORLD INDEX



Historical Gross Performance, USD	MSCI World	MSCI World Minimum Volatility
Total Return* (%)	7.62	8.71
Total Risk* (%)	15.0	11.3
Risk Adjusted Return	0.51	0.77
Active Return* (%)	N/A	1.10
Tracking Error* (%)	N/A	6.59
Information Ratio	N/A	0.17

\* Annualized from May 1988 to May 2015

## THE ADDITION OF MSCI MINIMUM VOLATILITY INDEXES HAS HISTORICALLY MAINTAINED RETURN WITH LESS RISK



## METHODOLOGY HIGHLIGHTS

PARAMETER	METHODOLOGY	COMMENTS
Universe	Parent index constituents	Derived indexes benefit from parent index construction rules
Optimization	MSCI's market leading <i>Barra</i> Global Equity Model (GEM2)	Accounts for factor volatility and correlation
Weighting	Minimize index volatility subject to constraints	Comprehensive and robust risk measures
Constraints	<ul style="list-style-type: none"> <li>Stocks: Maximum = lower of 1.5% or 20x the parent index cap weight; Minimum = 5bps</li> <li>Sectors: +/- 5% relative to the parent index</li> <li>Countries: +/- 5% (capped at 3x relative to the parent index, if weight in parent &lt; 2.5%)</li> <li>Style: +/- 0.25 relative to <i>Barra</i> factor exposure of the parent index (except for Volatility)</li> <li>Turnover: Maximum 10% one-way turnover per rebalancing</li> </ul>	<p>Stock weight cap ensures adequate capacity and replicability</p> <p>Style and Sector caps ensure no unintended exposure</p> <p>Turnover limit ensures low cost replication</p>
Number of Constituents	<ul style="list-style-type: none"> <li>Subset of parent index, number will vary</li> </ul>	High level of diversification achieved by a subset of parent index
Rebalancing	<ul style="list-style-type: none"> <li>Semi-annual</li> <li>Buffer zones are applied</li> </ul>	Timely data updates, consistent with MSCI rebalancing calendar

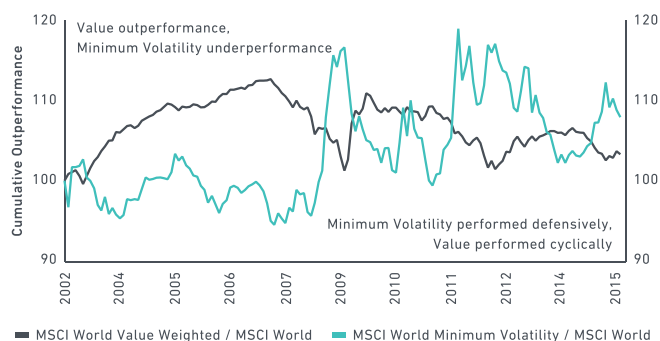
## ILLUSTRATIVE USE CASE

- A G8 national pension fund used the MSCI World Minimum Volatility Index to de-risk its equity portfolio
- Instead of moving from equity to fixed income, the fund allocated 25% of its developed market equity to the MSCI World Minimum Volatility Index
- Historically, the MSCI Minimum Volatility Indexes have effectively reduced risk in comparison to their parent indexes

## COMBINING MSCI FACTOR INDEXES

- MSCI Minimum Volatility, Value Weighted, Quality and other MSCI Factor Indexes outperformed their cap weighted parent indexes over long periods
- However, performance is cyclical: any factor index can underperform for long periods
- Therefore, a higher level of diversification may be achieved by combining two or more of these MSCI Factor Indexes
- Combinations may also reduce overall cost by exploiting natural internal "cross opportunities" at each rebalancing

## COMBINING MSCI MINIMUM VOLATILITY AND MSCI VALUE WEIGHTED INDEXES (USD)



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