

# 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.

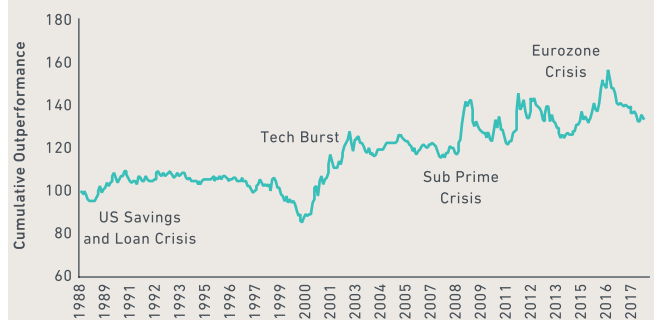
## WHY DO INVESTORS USE MINIMUM VOLATILITY STRATEGIES?

- 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

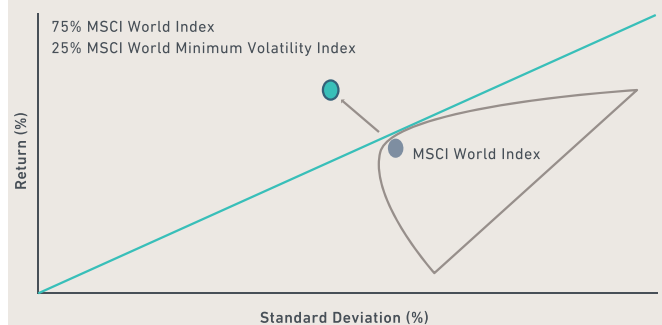
## PERFORMANCE OF MSCI WORLD MINIMUM VOLATILITY INDEX RELATIVE TO MSCI WORLD INDEX



Historical Gross Performance, USD	MSCI World	MSCI World Minimum Volatility
Total Return* (%)	7.68	8.70
Total Risk* (%)	14.6	11.0
Risk Adjusted Return	0.53	0.79
Active Return* (%)	N/A	1.02
Tracking Error* (%)	N/A	6.59
Information Ratio	N/A	0.16

\* Annualized from May 1988 to May 2018

## 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 Barra 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 Barra 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

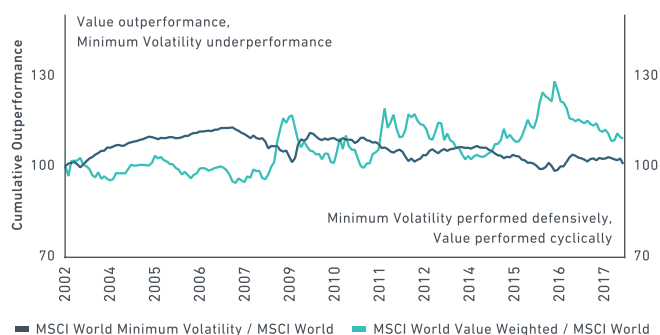
## ILLUSTRATIVE USE CASE

- 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)



The information contained herein (the "Information") may not be reproduced or disseminated in whole or in part without prior written permission from MSCI. The Information may not be used to verify or correct other data, to create indexes, risk models, or analytics, or in connection with issuing, offering, sponsoring, managing or marketing any securities, portfolios, financial products or other investment vehicles. Historical data and analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. None of the Information or MSCI index or other product or service constitutes an offer to buy or sell, or a promotion or recommendation of, any security, financial instrument or product or trading strategy. Further, none of the Information or any MSCI index is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such. The Information is provided "as is" and the user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF MSCI INC. OR ANY OF ITS SUBSIDIARIES OR ITS OR THEIR DIRECT OR INDIRECT SUPPLIERS OR ANY THIRD PARTY INVOLVED IN THE MAKING OR COMPILING OF THE INFORMATION (EACH, AN "MSCI PARTY") MAKES ANY WARRANTIES OR REPRESENTATIONS AND, TO THE MAXIMUM EXTENT PERMITTED BY LAW, EACH MSCI PARTY HEREBY EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. WITHOUT LIMITING ANY OF THE FOREGOING AND TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN NO EVENT SHALL ANY OF THE MSCI PARTIES HAVE ANY LIABILITY REGARDING ANY OF THE INFORMATION FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR ANY OTHER DAMAGES EVEN IF NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES. The foregoing shall not exclude or limit any liability that may not be applicable law be excluded or limited.

©2018 MSCI Inc. All rights reserved | CFS0718