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Five concerns with low volatility index ETFs

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- Low volatility index ETFs offer transparent exposure to the low risk factor
- However, we have concerns about index arbitrage, factor exposures, breadth, level of complexity and rebalancing methodology
- We address these concerns in our active Conservative Equities strategy

Nowadays, equity investors have the choice between active low volatility managers and low volatility index ETFs. Index strategies offer a transparent and often cheaper alternative to active low volatility investing, but this comes with several drawbacks in our opinion.

We will take a closer look at the two most popular low volatility indices: the MSCI Minimum Volatility Index, available through iShares, and the S&P Low Volatility Index, available through PowerShares.

In this note, we compare the methodology of these indices with our active Robeco Conservative Equities strategy, and address five concerns we have with low volatility index ETFs.

To start with, the table below shows the main characteristics of the two indices and Robeco Conservative Equities.

'We keep our process as simple as possible, and as complex as needed'

	MSCI Minimum Volatility Index	S&P Low Volatility Index	Robeco Conservative Equities
Methodology	Minimum Variance	Ranking	Proprietary ranking algorithm
Main factors	Beta	Volatility	Beta, volatility, credit risk, value, momentum
Rebalance	Semi-annual	Quarterly	Monthly and in case of large flows
Expected turnover	20% (model constraint)	50%	25%

Source: MSCI, S&P, Robeco

These two indices form the basis of the ten largest low volatility ETFs, as Table 1 shows.

Table 1 - Top 10 low volatility ETFs

Name	ticker	AuM in USD
iShares Edge MSCI Min Vol USA	USMV US	12,701
iShares Edge MSCI Min Vol EAFE	EFAV US	6,763
PowerShares S&P 500 Low Volatility	SPLV US	6,647
iShares Edge MSCI Min Vol Emerging	EEMV US	3,847
iShares Edge MSCI Min Vol Global	ACWV US	3,220
iShares Edge MSCI World Minimum Volatility	MVOL LN	1,636
iShares Edge MSCI Europe Minimum Volatility	MVEU LN	1,479
iShares Edge S&P 500 Minimum Volatility	SPMV LN	1,091
PowerShares S&P MidCap Low Volatility	XMLV US	997
PowerShares S&P SmallCap Low Volatility	XSLV US	917

Source: Bloomberg <ETF>, selection of low volatility ETFs within the Bloomberg ETF strategy classifications *multi-factor, fundamental* and *market cap*.

MSCI Minimum Volatility Index

MSCI uses a minimum variance approach to build its low volatility index. The index takes the constituents of the MSCI parent index and aims to construct the theoretical minimum volatility portfolio by using a proxy of 1-year stock price volatilities and 3-year correlation estimates. Together with several restrictions on turnover[1], maximum stock weights and relative exposures to sector, industries and risk factors, the MSCI Barra optimizer calculates the theoretically optimal minimum volatility portfolio.

[1] The index uses a turnover constraint of 10% per semi-annual rebalance. This creates a path-dependent process, in which the index drifts away from the theoretical minimum volatility portfolio.

Pro:

- Captures the low risk anomaly
- Sophisticated approach

Con:

- Complicated optimization process leads to index constituents that are hard to explain
- Largely ignores return factors like value and momentum
- Highly dependent on correlation estimates
- Forced turnover constraint

S&P Low Volatility Index

The S&P Low Volatility Index has a straightforward methodology. For example, for the US version, S&P takes the stocks from the S&P 500, ranks them on 1-year volatility, and invests in the 100 stocks with the lowest volatility. This process is repeated quarterly. The weights are inversely related to the stock volatility, which in practice leads to an almost equal-weighted portfolio. The index disregards any other factors and does not have sector, industry or country restrictions.

Pro:

- Easy to understand
- Transparent way to capture low risk anomaly

Con:

- Ignores return factors like value and momentum
- Short lookback-period gives high turnover
- Its simplicity makes the index prone to index arbitrage
- No sector concentration limits

Five concerns with low volatility index strategies

Although we see the merits of index investing, we have some concerns with smart beta indices. The original idea of passive index investing is to provide low-turnover, low-cost exposure to equity markets. These principles are watered down in smart beta indices, which are by definition active strategies and can have a high turnover.

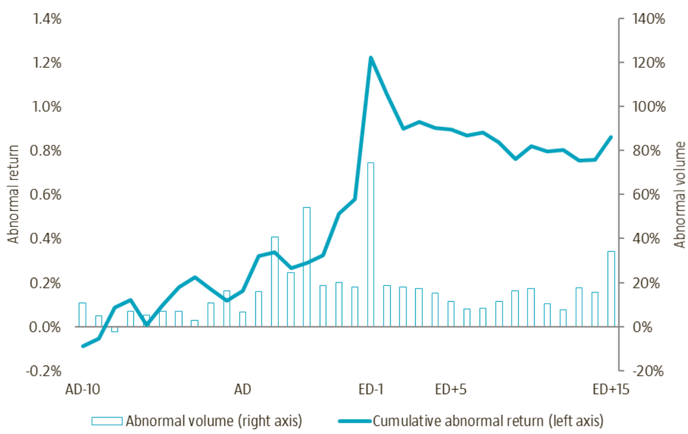
Moreover, we have several general concerns with low volatility indices. In the remainder of this note, we will address five of them.

1. Low volatility indices are vulnerable to index arbitrage

Low volatility indices, as every smart beta index, have a low capacity because of possible index arbitrage. This sounds counterintuitive, as index investing is associated with high capacity. However, this only holds for market-cap weighted indices, not for any alternatively weighted index.

As smart beta indices are public, including their methodology and rebalancing dates, they are prone to index arbitrage by market participants such as hedge funds. A recent Robeco study indeed confirms that there is an effect of index rebalance announcements and subsequent stock price movements. Figure 1 shows the main finding. Stocks that are announced to be added to the index rise in price before actually being included in the MSCI Minimum Volatility Index, while the opposite effect is observed for deletions. Both effects are disadvantageous for index investors as an ETF on the index buys the additions at a higher price and sells deletions at an already lower price. These effects become larger as assets in smart beta ETFs grow.

Figure 1 | Abnormal returns between announcement and effective date



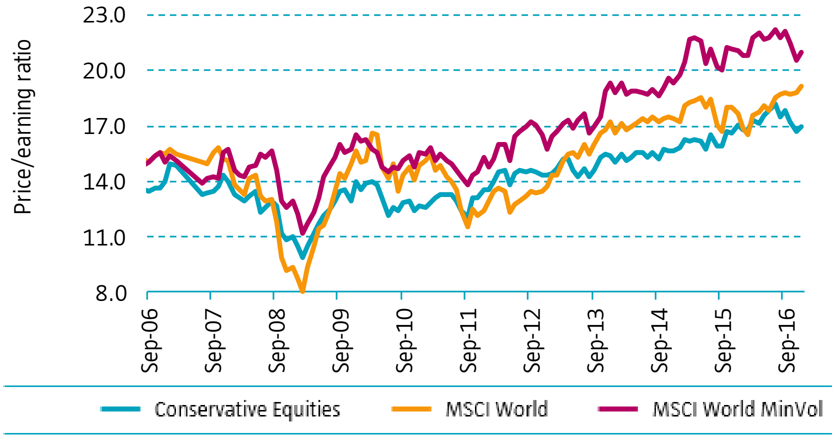
Source: Huij and Kyosev, October 2016, Price Response to Factor Index Additions and Deletions. Results are calculated for MSCI Minimum Volatility USD indexes, returns are in USD. The graphs show the average cumulative outperformance and abnormal volume of new overall constituents in the MSCI Minimum Volatility indexes during Sep-2010 – Dec-2015. AD is announcement day, ED is effective day.

2. Low volatility indices frequently go against other factors

Both the MSCI Minimum Volatility and S&P Low Volatility Index can have significant negative exposure to other proven factors like value and momentum. Our research[2] shows that this can hurt the performance of any low risk strategy substantially.

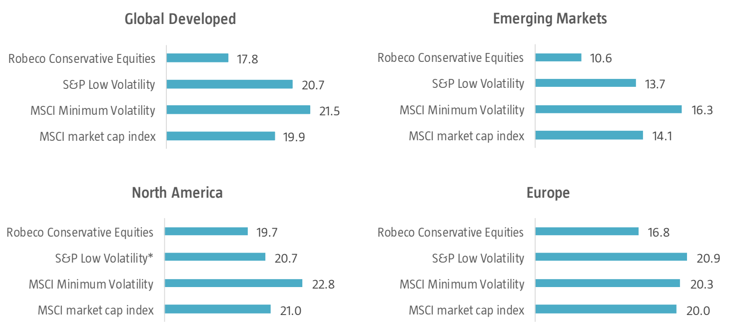
For example, although the MSCI Minimum Volatility Index takes into account several risk factors, the index can have a relatively high valuation, as has been the case in recent years. Figure 2 shows the trailing P/E of the market cap index, the minimum volatility index and Robeco Conservative Equities since inception of our strategy in 2006. Moreover, Figure 3 shows the current P/E of the two indices, and Robeco Conservative Equities. In all four regions, the P/E of Robeco Conservative Equities is lower than the low volatility index P/E.

Figure 2 | Price/earnings ratio over time



Source: Robeco, Factset

Figure 3 | Trailing P/E



Source: Robeco, Factset, S&P. As of April 2017. *S&P North America is US-only.

[2] Blitz, Hanauer and van Vliet, "Beauty and the beast of low volatility investing", Robeco research paper, February 2015.

3. Limited investment universe

We prefer to have a broad investment universe, which enables us to be selective. We do not just look for low risk stocks; we want to hold low risk stocks that offer good value and momentum exposure, with a high and stable dividend yield. A larger universe allows us to invest in the most attractive low risk stocks for our clients.

Most low volatility indices have limited breadth, as only stocks from the parent index are considered. This is especially the case for regional indices. For example, while the popular PowerShares S&P 500 Low Volatility ETF (SPLV) only chooses from 500 stocks, our US Conservative Equities strategy selects from 2,400 investable stocks in the US and Canada, which gives us much more breadth. Also in other regions, especially Europe, Conservative Equities utilizes a much larger opportunity set than low volatility indices. Our research shows that larger breadth enhances the risk/return profile of factor strategies[3].

Table 2 – Investment universe of MSCI MinVol, S&P Low Vol, Robeco Conservative Equities

# of stocks (appr)	**Global Developed**	**North America**	**Emerging markets**	**Europe**
MSCI Minimum Volatility	1650	725	825	450
S&P Low Volatility*	1925	500	1100	350
Robeco Conservative Equities	3850	2400	1450	1100

Source: Robeco, Factset (March 2017), S&P (April 2017). * S&P North America is US-only.

[3] Blitz and Vidojevic, "Factor strategies need breadth", Robeco research paper, April 2015.

4. Too complex or too simple

We consider the MSCI Minimum Volatility Index as too complex and the S&P Low Volatility Index as too simple.

The methodology of the MSCI Minimum Volatility Index is quite complicated, as it uses a quadratic optimization process, subject to several constraints. The index relies heavily on correlation estimates, which makes index constituents more difficult to explain. Moreover, the index can contain low correlation stocks that have a high stand-alone volatility. The classic example are Canadian gold mining stocks; good portfolio diversifiers, but highly volatile stocks. We prefer low volatility stocks to low correlation stocks, in which we are supported by convincing historical evidence[4].

Conversely, the S&P Low Volatility Index has an overly simple methodology. The index relies on just one risk factor, volatility, and just one lookback period of one year. Other factors like value and momentum as well as concentration risks are ignored.

We think the virtue is in the middle. In our Conservative Equities strategy, we keep our process as simple as possible, and as complex as needed. We make limited use of correlations, as the beta factor is one of our three low risk factors, next to volatility and credit risk, but do not let correlations take over control in portfolio construction. Our stock weighing scheme mainly leans on equal-weighting, while having liquidity and concentration limits in place.

	MSCI Minimum Volatility Index	**S&P Low Volatility Index**	**Robeco Conservative Equities**
Max weight per stock	1.5%	No max	2%
Relative sector limit	5%	None	10%
Weighting scheme	Outcome of minimum variance optimization	Inverse of volatility	Equal-weighting with adjustment for size & liquidity
Dependence on correlation	High	None	Low
Main factors	Beta	Volatility	Beta, volatility, credit, risk, value, momentum
Expected turnover	20% (model constraint)	50%	25%

Source: MSCI, S&P, Robeco

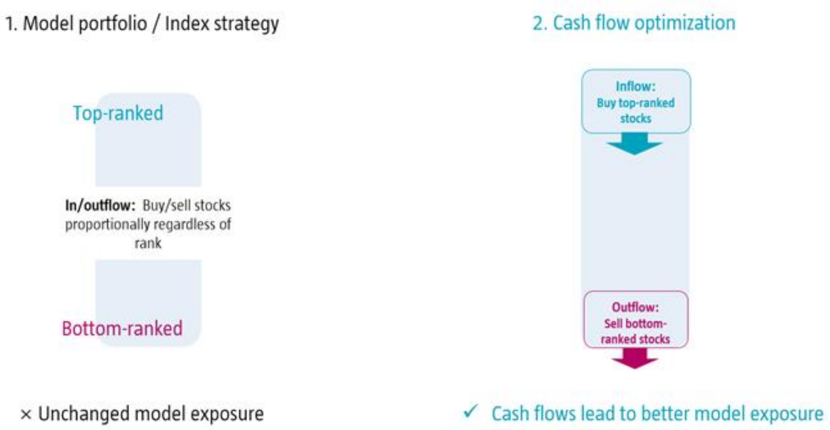
[4] Blitz, Karstanje and van Vliet, "Be cautious with correlations", Robeco research paper, June 2015.

5. Sub-optimal rebalancing frequency and methodology

The MSCI Minimum Volatility Index rebalances semi-annually, while the S&P Low Volatility index has a quarterly cycle. We see three drawbacks:

1. Between index reviews, new information on individual stock characteristics is ignored and not incorporated in the portfolio.
2. Index changes have to be processed in a short period of time, which can be a challenging task for traders, as ETFs do not make use of the continuous market liquidity throughout the year.
3. Cash in- and outflows have to be invested according to the index composition at any point in time. This creates unnecessary turnover. As an example, if a stock is not attractive anymore and will likely be removed at the next index rebalance, it still has to be bought if the ETF has inflows before this index rebalance.
   Robeco Conservative Equities uses cash flows to optimize portfolios, incorporating the latest ranking scores. Inflows are invested in top-ranked stocks, while outflows are used to get rid of the least attractive stocks. This substantially reduces the turnover of our Conservative Equity strategies with frequent cash flows. The differences between index rebalancing and cash flow optimization are summarized in Figure 4.

Figure 4 | Rebalancing of index strategy versus cash flow optimization



Conclusion

In this note, we addressed five concerns we have with popular low volatility indices and their ETFs. With our active, enhanced approach to low volatility investing, we aim to avoid these pitfalls, as summarized in the table below.

Concern	Robeco Conservative Equities
1. Vulnerable to index arbitrage	Conservative Equities is a non-public strategy, not prone to index arbitrage.
2. Going against other factors	Value and momentum are explicit factors in the Conservative Equities model, to avoid expensive low volatility stocks with weak momentum.
3. Limited investment universe	Conservative Equities screens several all-cap indices, resulting in a broad investment universe to find the most attractive low volatility stocks.
4. Too simple or too complex	We aim for a fine line between sophistication and simplicity. Both our ranking and construction methodology lead to easily explainable portfolios.
5. Sub-optimal rebalancing frequency and methodology	Conservative Equities rebalances on a monthly basis or when significant cash flows occur, which are invested in a cash flow optimized way for more model exposure and low turnover.

We use the MSCI market cap and MSCI minimum volatility indices as official reference indices for all our Conservative Equities strategies. Since inception of the global strategy in 2006, we have managed to keep the volatility almost as low as the MSCI World Minimum Volatility Index, but with an annualized outperformance of more than 1.5%[5].

[5] As of end of April 2017. Volatility of Robeco Institutional Conservative Equities over the period Oct-06 – Apr 17 was 10.7% (based on monthly returns) with a return of 8.37%, gross of fees. Volatility of the MSCI World Minimum Volatility Index (EUR optimized) over the period Oct-06 – Apr 17 was 10.5% (based on monthly returns) with a return of 6.77%, gross of fees. Returns are in EUR. The value of your investments may fluctuate. Past performance is not an indication of future results. Please refer to the appendix for other important disclosures.

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