EDHEC-Risk Days Europe 2016

Factor Investing: Adding Alternative Beta to Your Portfolio

Thomas Merz, Managing Director
UBS Exchange Traded Funds

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Section 1

Smart Beta: Walk the talk!
Gaining momentum

Comparison of asset in global equity ETFs

Market Cap Beta

Alternative Beta

Other

Active

USD 1,768bn
2,257 products

USD 394bn
748 products

USD 119bn
149 products

USD 6bn
113 products

Source: UBS Asset Management, ETFGI ETF and ETP Smart Beta Insights: Global December 2015.
Growth faster than market cap ETFs

Assets in Alternative Beta ETFs have been growing rapidly, particularly in 2013-2015

Source: UBS Asset Management, ETFGI ETF and ETP Smart Beta Insights: Global December 2015.
The factor investing landscape

More factors attract assets: Allocation by factor type in USD bn and %

USD 394 bn
748 products

- Yield strategies with the largest AuM base: USD 128.5 bn
- AuM dominated by fundamental factors with USD 280.7 bn or 71% (incl. assets in v1.0)
- The volatility factor has been relatively the fastest growing category in 2015

Source: UBS Asset Management, ETFGI ETF and ETP Smart Beta Insights: Global December 2015.
## Conclusion section 1

Our value proposition: 4 factor benchmarks for 2 key regions: USA and Eurozone

<table>
<thead>
<tr>
<th>ETF</th>
<th>Benchmark Index</th>
<th>Rationale</th>
<th>Key Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UBS ETF Prime Value</strong></td>
<td>MSCI Prime Value</td>
<td>&quot;I like investing in value stocks but I am concerned about their quality&quot;</td>
<td>High Quality Checks&lt;br&gt;Low Price to Earnings&lt;br&gt;Low Price to Book Value&lt;br&gt;Low Price to Sales&lt;br&gt;Low Price to Cash Earnings</td>
</tr>
<tr>
<td><strong>UBS ETF Low Volatility</strong></td>
<td>MSCI Select Dynamic 50% Risk Weighted</td>
<td>&quot;I like investing in equities but I prefer to avoid high volatility and heavy concentration&quot;</td>
<td>Low Return Volatility</td>
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<tr>
<td><strong>UBS ETF Total Shareholder Yield</strong></td>
<td>MSCI Total Shareholder Yield</td>
<td>&quot;I like investing in companies which care about return of capital to their shareholders&quot;</td>
<td>High Dividend Yield&lt;br&gt;High Buyback Yield&lt;br&gt;High Debt Reduction Yield</td>
</tr>
<tr>
<td><strong>UBS ETF Quality</strong></td>
<td>MSCI Quality</td>
<td>&quot;I like investing in companies with outstanding quality balance-sheets&quot;</td>
<td>High Return on Equity&lt;br&gt;Low Variability in Earnings Growth&lt;br&gt;Low Debt to Book Value</td>
</tr>
</tbody>
</table>

Section 2

Factor ETFs – Passive or active implementation?
Setting the scene

**Passive: traditional Beta**
- E.g. S&P 500 or Nikkei 225
- E.g. MSCI Value and MSCI Growth
- E.g. MSCI Total Shareholder Yield

**Smart Beta**
- rules-based, transparent and indexed exposures
- under-represent the market whilst providing exposure to targeted factors
- active risk (tracking error to market cap benchmark), active turnover and lower liquidity

**Active: traditional Alpha**
- Limits on cherry-picking
- Long/short unlimited allocations

**Unconstrained Alpha**

**Constrained Alpha**

**Multi-factors allocations**

**Factor**

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Source: Bloomberg, UBS Asset Management. For illustrative purpose only.
Long-term performance

Relative performance to the parent indices indicate **long-term outperformance**

**EMU Relative Performance TR Net in EUR**

**USA Relative Performance TR Net in USD**

Source: MSCI, monthly data from January 2000 to January 2016.

Index level data for factor indices contains live and back-tested data. Past performance, whether simulated or actual, is not a reliable indicator of future results.
Short-term performance

Short-term relative performance to the parent indicate **tactical opportunities**

**EMU Relative Performance TR Net in EUR**

**USA Relative Performance TR Net in USD**

Source: MSCI, daily data from 31 January 2011 to 29 January 2016.

Index level data for factor indices contains live and back-tested data. Past performance, whether simulated or actual, is not a reliable indicator of future results.
Determinants for replication of factor indices

Three relevant criteria: turnover, liquidity and tracking error

Source: MSCI, UBS Asset Management, as of 31 December 2015.

Value = MSCI USA Prime Value Index; Quality = MSCI USA Quality Index; Yield = MSCI USA Total Shareholder Yield; Low Volatility = MSCI USA Select Dynamic 50% Risk Weighted; Momentum = MSCI USA Momentum Index; Size = MSCI USA Equal Weight
The exercise

A number of smart beta strategies show 200-300bps excess annualised return. At the same time, a growing number of investors express worries about the spreads of the factor-tilted strategies – the key component that determines the final outcome.

<table>
<thead>
<tr>
<th>Market beta performance</th>
<th>&lt; 200bps</th>
<th>Smart beta performance</th>
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<tbody>
<tr>
<td>Passive implementation</td>
<td>?</td>
<td>Implementation style</td>
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<tr>
<td>Currency Return</td>
<td>?</td>
<td>Currency Return</td>
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<tr>
<td>Expense Ratio</td>
<td>≈</td>
<td>Expense Ratio</td>
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<tr>
<td>Commissions</td>
<td>=</td>
<td>Commissions</td>
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<tr>
<td>Spreads</td>
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<td>Spreads</td>
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<tr>
<td>(Tracking Difference)</td>
<td>≈</td>
<td>(Tracking Difference)</td>
</tr>
<tr>
<td>Total cost of ownership</td>
<td>?</td>
<td>Total cost of ownership</td>
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</table>

Source: Bloomberg, UBS Asset Management. For illustrative purpose only.
Cyclicality of factor exposures

Factor excess returns over the market cap benchmark (YoY)

"Bull" markets favor market caps, relative to factors

Factors offer better downside protection relative to market cap in "bear" markets

Factors prove beneficial in "side-trending" markets, where there is still appetite for equity

Index level data for factor indices contains live and back-tested data. Past performance, whether simulated or actual, is not a reliable indicator of future results.
Application of factor exposures

Valuations are generally gearing towards above-average and more market participants looking for "occasions"

Prime Value

Low Volatility
Large market ups & downs with more market participants towards risk-off mode

Quality
Quality stocks with durable business models and low volatility in earnings prove more robust in market downturn

Total Shareholder Yield

Fast recovery in earnings with many managers aiming to please the shareholders and use the available cash to carry out buyback programs

Source: UBS Asset Management. For illustrative purpose only.
Low volatility enhanced portfolios

Hypothesis: better down side properties?

Note: Market levels indexed to 100 at 31.05.1999
Source: UBS Asset Management, data as of 13 November 2015. For illustrative purpose only.
Low volatility enhanced portfolios (cont.)

Unconditional findings

Excess return full period, US portfolios

Excess return full period, European portfolios

Note: Market levels and cumulated excess return indexed to 1 at 05.04.2000. All returns are based on daily index levels from 5 April 2000 through 13 November 2015 in local currency and are calculated using the log return method. The lsw model portfolio uses factor return long positions fully financed by the broad market position for all risk-off periods. The lsh model portfolio uses factor return long positions financed by selling short the broad market position for all risk-off periods. The eqw_daily model portfolio uses factor return and broad market long positions equally weighted on a daily basis where the eqw model portfolio uses factor return and broad market long positions with an equal split on a buy and hold basis, and finally the eqw_jan model portfolio uses factor return and broad market long positions equally weighted where the rebalancing is executed on the first day of each individual calendar year.

Source: UBS Asset Management, data as of 13 November 2015. For illustrative purpose only.
Low volatility enhanced portfolios (cont.)

Risk adjusted returns

**Calmar Ratios**

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<th></th>
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<th>lsh</th>
<th>eqw_daily</th>
<th>eqw</th>
<th>eqw_jan</th>
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<td>0.43</td>
<td>0.08</td>
<td>0.13</td>
<td>0.10</td>
<td>0.12</td>
<td>0.11</td>
<td>0.06</td>
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**Modified Sharpe Ratios**

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<th>eqw_jan</th>
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<tr>
<td>0.16</td>
<td>0.01</td>
<td>0.07</td>
<td>0.11</td>
<td>0.14</td>
<td>0.12</td>
<td>0.01</td>
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</table>

**Max. dd. full period, US portfolios**

-60%  -50%  -40%  -30%  -20%  -10%  0%  10%  20%  30%  40%  50%  60%

<table>
<thead>
<tr>
<th></th>
<th>lsw</th>
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<th>eqw_daily</th>
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<td>05.04.2000</td>
<td>05.04.2004</td>
<td>05.04.2008</td>
<td>05.04.2012</td>
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<td></td>
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</table>

**Max. dd. full period, European portfolios**

-70%  -60%  -50%  -40%  -30%  -20%  -10%  0%  10%  20%  30%  40%  50%  60%  70%

<table>
<thead>
<tr>
<th></th>
<th>lsw</th>
<th>lsh</th>
<th>eqw_daily</th>
<th>eqw</th>
<th>eqw_jan</th>
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<td>28.03.2000</td>
<td>28.03.2004</td>
<td>28.03.2008</td>
<td>28.03.2012</td>
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Note: CR and MSR values are based on daily index levels from 5 April 2000 through 13 November 2015 in local currency and are calculated using the log return method. For details regarding the portfolio forming process, please refer to the previous footnote on slide 15.

Source: UBS Asset Management, data as of 13 November 2015. For illustrative purpose only.
Low volatility enhanced portfolios (cont.)

Conditional findings

**Exc. Ret. peak-to-bottom (PtoB), selected US portfolios**

- Ish(USA) $R^2 = 0.9058$
- eqw(USA) $R^2 = 0.9361$

**Exc. Ret. peak-to-bottom (PtoB), selected European portfolios**

- Ish(EMU) $R^2 = 0.931$
- eqw(EMU) $R^2 = 0.9361$

**Exc. Ret. bottom-to-peak (BtoP), selected US portfolios**

- Ish(USA) $R^2 = 0.769$
- eqw(USA) $R^2 = 0.0237$

**Exc. Ret. bottom-to-peak (BtoP), selected European portfolios**

- Ish(EMU) $R^2 = 0.2232$
- eqw(EMU) $R^2 = 0.0101$

Note: For details regarding the portfolio forming process, pls refer to the previous footnote on slide 15.

Source: UBS Asset Management, data as of 13 November 2015. For illustrative purpose only.
Low volatility enhanced portfolios (cont.)

Conditional findings

Excess returns annualized, US portfolios (at different threshold levels)

-10% 10.5% 7.7% 8.2% 8.5%
-20% 19.4% 13.8% 15.9% 15.2%
-30% 22.5% 12.5% 14.9% 13.6%
-40% 27.1% 10.7% 13.0% 11.4%

Full drop 17.2% 10.1% 12.4% 10.8%

Excess returns annualized, European portfolios (at different threshold levels)

-10% 16.8% 10.0% 8.7% 8.7%
-20% 5.3% 5.7% 6.3% 5.7%
-30% 1.1% 5.6% 5.7% 5.7%
-40% 1.4% 5.6% 6.1% 5.8%

Full drop -0.9% 8.2% 10.5% 8.4%

Note: For details regarding the portfolio forming process, please refer to the previous footnote on slide 15.
Source: UBS Asset Management, data as of 13 November 2015. For illustrative purpose only.
Conclusion section 2

- Cyclicality of alternative beta returns are well recognized which raises the question of which implementation strategy is the most beneficial.
- When looking at how low volatility enhanced portfolio returns both portfolio construction processes deliver on average excess returns also when adjusting for the level of risk taken.
- We find that these excess return are a result of better down side properties of low volatility enhanced portfolios regardless of which the portfolio construction applied.
- Equal weight construction techniques exhibit a consistent excess return for different thresholds, while the results for the switch model construction techniques are quite dependent on the severity of the down market cycle.
Section 3

Currency considerations
NAV currency vs funding currency

In the case when factor exposure is constructed from multiple-currency regions, there might be considerable FX "noise". Consider the 'standard' case of global equities:

NAV currency
e.g. MSCI World in USD

Funding currency
e.g. GBP

short GBP -> long basket of foreign currencies

Source: UBS Asset Management. For illustrative purpose only.
Global smart beta imply active FX risks

For example, MSCI World Quality allocates 72% to USD (13% overweight to USD), whilst MSCI World Equal Weight only 39% to USD (20% underweight to USD).


Value = MSCI World Value Weighted Index; Quality = MSCI World Quality Index; Yield = MSCI High Dividend Yield; Low Volatility = MSCI World Risk Weighted; Momentum = MSCI World Momentum Index; Size= MSCI World Equal Weight
Factor returns vs currency returns

The mismatch in the NAV vs funding currency entails additional investment risk, which may remain uncompensated: hedging of global equity exposure funded in CHF or JPY may have proven absolutely critical.

<table>
<thead>
<tr>
<th>Currency</th>
<th>Factor Returns</th>
<th>Currency</th>
<th>Factor Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>7%</td>
<td>USD</td>
<td>8%</td>
</tr>
<tr>
<td>JPY</td>
<td>9%</td>
<td>GBP</td>
<td>10%</td>
</tr>
<tr>
<td>CHF</td>
<td>11%</td>
<td>CAD</td>
<td>12%</td>
</tr>
<tr>
<td>SEK</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**World factors in local currencies**

MSCI Factors TR Net (Nov '78 - Feb '16)
(local currencies = continuous hedge)

Factors have added excess return of 100-300bps

**World in different currencies**

MSCI World TR Net (Nov '78 - Feb '16)


Value = MSCI World Value Weighted Index; Quality = MSCI World Quality Index; Yield = MSCI High Dividend Yield; Low Volatility = MSCI World Risk Weighted; Momentum = MSCI World Momentum Index; Size = MSCI World Equal Weight
Factor premia higher than currency premia

Smart beta exposures have generally provided higher excess return than world exposure irrespective of the funding currency, i.e. investors have been compensated more for factor risks than for currency risks.


Value = MSCI World Value Weighted Index; Quality = MSCI World Quality Index; Yield = MSCI High Dividend Yield; Low Volatility = MSCI World Risk Weighted; Momentum = MSCI World Momentum Index; Size = MSCI World Equal Weight
Decade-on-decade analysis


Value = MSCI World Value Weighted Index; Quality = MSCI World Quality Index; Yield = MSCI High Dividend Yield; Low Volatility = MSCI World Risk Weighted; Momentum = MSCI World Momentum Index; Size = MSCI World Equal Weight
Conclusion section 3

General findings:
• We have analyzes in depth the reward-to-risk space for the factor risks (six factors) vs currency risks (G10 currencies)
• We find that investors have been compensated more for the factor risks than for the currency risks (though it differs in time as our decade-on-decade analysis shows)
• Currency risks add in general quite some volatility to the performance, whilst factor exposure may help to reduce the volatility risk
• Factor allocations can easily be mixed (e.g. low volatility and quality mix), while currency enhancements are more complex to mix

Final comments:
• The currency allocations in aggregate alternative beta exposure are uncontrollable, so investor cannot easily hedge them away or leverage if wished
• When allocating to alternative beta, are the investors willing to take active FX risks? Are they aware of it?
• Our approach is to offer investors with pure factor exposures with the currency hedged share classes and to provide expertise on the working principles of these type of indices
Section 4

Liquidity considerations
Back to basics: liquidity of underlyings

Top 1% of the most liquid remains liquid (spread c. 6-8bps), whilst top 1% of the least liquid faces occasional frictions (>70-80bps); the 5%-95% quantile range looks stable.

The quantile range of bid-ask average daily 1st quote spread (in bps)
MSCI EMU underlyings

UK investor: MSCI EMU ETF at LSE

The ETF spreads generally stay above the weighted underlyings but behave erratically over the time including some "liquidity shocks".

Understanding all layers of ETF liquidity

Secondary market

"pooled" ETF ask price

"Hidden" liquidity

Liquidity "on the screen"

Liquidity of the underlyings

Primary market

ETF ask price

ETF bid price

"pooled" ETF bid price

- multiple-listings
- multiple MMs
- depth of order books
- primary-listing
- 1st level of order book

Source: UBS Asset Management. For illustrative purpose only.
Pooled ETF spreads vs. underlying market liquidity

Pooled spread of the cross-listed* MSCI EMU ETFs was 18.2bps, whilst of the underlyings it was 10.3bps, implying a delta in spread of 8bps.

* Listings include: Borsa Italiana, Euronext Amsterdam, LSE, SIX Swiss Exchange, Stuttgart Stock Exchange, Tokyo Stock Exchange, XETRA

What can you expect for the UBS Factor ETFs?

The spreads of UBS Factor ETFs trade at 4x of underlyings median in normal environment; and 6ix feasible target (more experience needed)

Source: Bloomberg, UBS Asset Management. Data as of 20 October 2015.
Active bets against the market cap benchmark

Source: MSCI, UBS Asset Management. Data as of 1 December 2015 (following November 2015 revision).
Conclusion section 4

• The basic assumptions of ETF liquidity hold also for alternative beta ETFs
• However, as the underlying basket of securities of alternative beta ETFs is quite different from any liquid hedge instrument (due to non-market-cap weighting), quoting gets a bit more tricky for APs/MMs
• Moreover, the higher turnover and higher active bet vs market cap makes the proxy hedging also face certain difficulties in their implementation
• Additionally to the structural differences between market cap and alternative beta baskets, the on-exchange demand is still in a at infant stage
• We assume that once more trading activity goes on-exchange, inside spreads will further improve
Summary and key findings

- Alternative beta ETFs are on the rise; lately the low volatility concept.
- We find that some well documented factors (size and momentum) are somewhat limited to be replicated via a long-only constraint physical passive portfolio.
- Due to the well documented cyclicality of factor returns, we find that an active as well as passive implementation style is justified.
- When focusing on one specific factor, in our case low volatility, we find that enhancing a portfolio with low volatility is beneficial specially in market down cycles (white paper to be released).
- We find that investors have been compensated more for the factor risks than for the currency risks and therefore we think it makes sense to invest via ccy hedged factor ETFs.
- When looking at the liquidity of factor ETFs, we see a clear difference between market cap and factor ETFs.
- At the moment higher bid/ask spreads on-exchange are a result of still small on-exchange demand as well as structural differences when hedging quotes on exchange (availability as well as rebalancing frequencies for proxi hedges).
# UBS Alternative Beta ETFs

<table>
<thead>
<tr>
<th>Fund name</th>
<th>Fee</th>
<th>Base Ccy</th>
<th>Replication</th>
<th>Distribution</th>
<th>ISIN</th>
<th>Bloomberg</th>
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</thead>
<tbody>
<tr>
<td>UBS ETF (LU) Factor MSCI EMU Low Volatility UCITS ETF</td>
<td>0.28%</td>
<td>EUR</td>
<td>Physical</td>
<td>Distributing</td>
<td>LU1215454460</td>
<td>ELOVD SW</td>
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<td>UBS ETF (LU) Factor MSCI EMU Low Volatility hedged CHF UCITS ETF</td>
<td>0.38%</td>
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<td>Physical</td>
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<tr>
<td>UBS ETF (IE) Factor MSCI USA Low Volatility hedged CHF UCITS ETF</td>
<td>0.35%</td>
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<tr>
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<td>0.35%</td>
<td>EUR</td>
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<td>UBS ETF (IE) Factor MSCI USA Low Volatility hedged GBP UCITS ETF</td>
<td>0.35%</td>
<td>GBP</td>
<td>Physical</td>
<td>Reinvesting</td>
<td>IE008X7R7R7R06</td>
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<td>UBS ETF (IE) Factor MSCI USA Prime Value UCITS ETF</td>
<td>0.25%</td>
<td>USD</td>
<td>Physical</td>
<td>Distributing</td>
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<td>ULPVD SW</td>
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<td>Physical</td>
<td>Reinvesting</td>
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<td>ULPVS SW</td>
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<td>Physical</td>
<td>Reinvesting</td>
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<td>ULPVE SW</td>
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<tr>
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<td>GBP</td>
<td>Physical</td>
<td>Distributing</td>
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<td>UBS ETF (IE) Factor MSCI USA Quality UCITS ETF</td>
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<td>Distributing</td>
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<td>UQLTD SW</td>
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<tr>
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<td>Physical</td>
<td>Reinvesting</td>
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<td>UQLTS SW</td>
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<td>Physical</td>
<td>Reinvesting</td>
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<td>Physical</td>
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<td>UBS ETF (IE) Factor MSCI USA Total Shareholder Yield UCITS ETF</td>
<td>0.25%</td>
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<td>Physical</td>
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<td>CHF</td>
<td>Physical</td>
<td>Reinvesting</td>
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<td>0.35%</td>
<td>EUR</td>
<td>Physical</td>
<td>Reinvesting</td>
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<td>UTSYH SW</td>
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<td>UBS ETF (IE) Factor MSCI USA Total Shareholder Yield hedged GBP UCITS ETF</td>
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<td>Physical</td>
<td>Distributing</td>
<td>IE008X7R7R7R06</td>
<td>UTSYU SW</td>
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Source: UBS Asset Management, data as of 2 March 2016.
UBS ETFs – Contact Information

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