Exchange-Traded Products Cross-Listing Performance

Methodology

Introduction
Morningstar has begun to generate net asset values and distributions for cross-listed exchange-traded products. As a result, Morningstar will now produce the following data points for cross-listed exchange-traded products:

- NAV (converted)
- Distributions (converted)
- Total NAV Return
- Total Market Price Return
- Since Inception Date NAV Return
- Since Inception Date Market Price Return
- Premium / Discount
- MPT Stats
- Listing Date
- De-Listing Date

Background
A cross-listed ETP is a fund that trades on a different exchange than its primary or original stock exchange. These ETPs often trade in a different currency than the primary shares. Because cross-listed ETPs are bought and sold at the market-price level, the ETP does not actually strike a NAV or distribute income in the cross-listed currency. Further, as no transactions are made at the NAV level, fund companies typically will not convert the primary ETP's NAV stream or distributions into the cross-listed currencies. Consequently, these firms will not have the converted NAV and distribution data available in their systems to send to Morningstar.

This has resulted in NAV, distribution, and any performance calculations driven from these data points to appear to be missing within our products for the cross-listed portion of the universe (approximately 50%). Further, any calculations that are derived from distribution data, such as market price total return, are also incorrect for cross listings because there are no distributions stored in our database for these calculations to pull.

Calculation
Historically, Morningstar has stored NAV and distribution data for only one listing, designated as the primary listing. In this new procedure, the NAVs and distribution data for the cross-listings will be converted from the primary share using the WM/Reuters benchmark 4 p.m. rate.
Distribution data includes any nonqualified and qualified distributions, capital gains, return of capital, and associated reinvest, record, pay, and declare dates for the primary listing.

**NAV and Distribution Data Conversion**

All raw NAV and distribution data that is stored for the primary listing is converted daily for each cross listing. Conversions are performed between the trading currency of the primary performance ID (called *base currency* in Morningstar Direct™) and the trading currency of the cross-listed performance ID. NAV conversions use end-of-day WM/Reuters exchange rates for the appropriate currency. Distribution data is converted using end-of-day WM/Reuters rate as of the excluding date listed for the distribution.

Converted NAV data is calculated back to the fund’s performance start date. Raw NAV and distribution data is converted for all historical data as well as on a go-forward basis.

For example, if the trading currency is EUR and the cross-listed security is in GBP, then the conversion is as follows:

\[
NAV_{GBP} = (NAV_{EUR})(FX_{EUR/USD})(FX_{GBP/USD})
\]

where \(FX\) is the USD/EUR WM/Reuters benchmark 4 p.m. rate for the given currencies.

**Total NAV Return Calculation for Converted Data**

Once converted NAV and distribution data are available for cross listings, it is used to calculate the total NAV return for cross listings. NAV returns for cross listings are calculated based on the standard total return methodology using converted daily NAV and distribution values. Total NAV return is calculated back to the fund’s performance start date. NAV returns for cross listings are calculated for all historical data as well as on a go-forward basis.

**Total Market Price Return Calculation for Converted Distribution Data**

Market price returns are already calculated for cross listings, but they do not include distribution data because distribution data is not available for cross listings. Once converted distribution data is available for cross listings, it is incorporated into total market price return calculations for cross listings. Cross-listing market price return calculations use the listing date for all time period returns. The calculation should stop at the listing date and not go back to the inception date. Updated market price returns for cross listings (which incorporate converted distributions) are calculated for all historical data as well as on a go-forward basis.

**Other Return Calculations**

With the newly available return information, Morningstar can calculate the following data points for current and historical time periods:

- Premium / Discount
- MPT Stats

**Examples**

Below is an example of an exchange-traded product with two cross-listings that have a listing date after the inception date of the underlying security.
Exhibit 1  Security Information for Exchange-Traded Product ABC

<table>
<thead>
<tr>
<th>Investment Name</th>
<th>Fund Id</th>
<th>Performance Id</th>
<th>Primary Share</th>
<th>Currency</th>
<th>Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC001</td>
<td>Yes</td>
<td>US Dollar</td>
<td>LONDON STOCK EXCHANGE</td>
</tr>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC002</td>
<td>No</td>
<td>Pound Sterling</td>
<td>LONDON STOCK EXCHANGE</td>
</tr>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC003</td>
<td>No</td>
<td>Euro</td>
<td>SWISS EXCHANGE</td>
</tr>
</tbody>
</table>

Source: Morningstar, Inc.

Without the cross-listed performance methodology, NAV and distribution data are not calculated, as shown below.

Exhibit 2  Example NAV and Distribution Without Cross-Listed Performance

<table>
<thead>
<tr>
<th>Investment Name</th>
<th>Fund Id</th>
<th>Performance Id</th>
<th>Primary Share</th>
<th>Date</th>
<th>NAV</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC001</td>
<td>Yes</td>
<td>2017-08-17</td>
<td>5.1</td>
<td>.01</td>
</tr>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC002</td>
<td>No</td>
<td>2017-08-17</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC003</td>
<td>No</td>
<td>2017-08-17</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Source: Morningstar, Inc.

With the cross-listed performance methodology, NAV and distribution are calculated by converting the NAV and distribution of the primary share from the trading currency into the cross-listed currency using the WM/Reuters end-of-day exchange rate. With NAV and distribution filled in for cross-listed ETPs, all performance-related data points will automatically be calculated.

Exhibit 3  Example NAV and Distribution Without Cross-Listed Performance

<table>
<thead>
<tr>
<th>Currency</th>
<th>Date</th>
<th>WM/Reuters 4 p.m. Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBP / USD</td>
<td>2017-08-17</td>
<td>0.77592</td>
</tr>
<tr>
<td>EUR / USD</td>
<td>2017-08-17</td>
<td>0.85161</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment Name</th>
<th>Fund Id</th>
<th>Performance Id</th>
<th>Primary Share</th>
<th>Date</th>
<th>NAV</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC001</td>
<td>Yes</td>
<td>2017-08-17</td>
<td>5.1</td>
<td>.01</td>
</tr>
<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC002</td>
<td>No</td>
<td>2017-08-17</td>
<td>3.957192</td>
<td>.0077592</td>
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<tr>
<td>Exchange-Traded Product ABC</td>
<td>ETPABC</td>
<td>ETPABC003</td>
<td>No</td>
<td>2017-08-17</td>
<td>4.343211</td>
<td>.0085161</td>
</tr>
</tbody>
</table>

Source: Morningstar, Inc.
**Miscellaneous Information**

**Coverage**
All exchange-traded funds, exchange-traded commodities, and exchange-traded notes. Those cross-listed ETPs on Canadian exchanges (Toronto (EX\\$\$\$XTSE) and Aequitas (EX\\$\$\$NEOE)) will be exempted; this market has 100% coverage of NAV and distribution data (thus, no need to convert). Otherwise, this change will apply globally.

**Frequency**
The NAV and distribution calculations are run daily at the end of the business day.

**Inception Dates vs. Listing Date**
ETPs will often have inceptions before they list. When this happens, current methodology is to not calculate a since-inception market price return because there is no market price for the inception date.

**Split Handling**
Split ratios recorded for the primary listing should be copied to all cross listings.
Appendix A: Frequently Asked Questions

Where will this new data be available?
At this stage, the new data will be solely available in Direct Cloud (not 3.x).

How can I tell generated performance data apart from official NAV/Distribution data?
The “Primary Share” data point will identify the official NAV and distribution data, which is surveyed either from a fund’s administrator or from the fund house directly.

Will closed-end funds be included in the methodology?
Closed-end funds are not in scope at this time.

What happens if there is a change to the end-of-day WM/Reuters exchange rate?
NAV and distribution data conversions will be recalculated if there is a change to the end-of-day WM/Reuters exchange rate.

How will the data be displayed?
Converted NAV, distribution data, and total NAV return for cross listings is not a separate data point. The additional data is simply being generated for existing NAV, distribution, and total NAV return data points.

Similarly, updated market price return incorporating converted distribution data for cross listings is not a separate data point. The additional data is simply being generated for the existing market price return data point.