Invesco
Indexing

Index Methodology Changes -
Conclusions from the 2018 Index Methodology Review

December 31, 2018

Each year, Invesco Indexing engages in a comprehensive review of index methodologies. Through this exercise, the team considers index methodology updates that have the potential to enhance the indexes' overall representativeness, investability, and consistency with expected exposures and outcomes. Invesco Indexing recognizes that changes to a methodology may have an impact on organizations that use the indexes as the basis of a portfolio, a performance benchmark, or a comparative index for analytical purposes, among other uses. Therefore, the team seeks feedback from its clients on proposed changes to better understand the impact from the viewpoint of various stakeholders. Through the course of 4Q18, Invesco Indexing actively solicited such feedback from their clients and the general public, which helped provide important context for the index methodology proposals.

As a result of the index methodology review and accompanying client consultations, Invesco Indexing is announcing four changes to index methodologies. Three of these changes are set to become effective with the respective June 2019 index rebalances; one change will be effective with the January 2019 rebalance. Revisions to the index methodology documents will be available on the Invesco Indexing website at www.invescoindexing.com by the end of 1Q19. Highlights of the methodology changes begin on the following page.

While full index methodology reviews and client consultations occur annually, Invesco Indexing continuously examines the design, construction, and maintenance of its indexes to ensure that they continue to deliver the expected market exposure and outcomes through clear, thoughtful, and transparent index construction methodologies. As always, the team welcomes client feedback at IndexSupport@invesco.com.

Kind regards,

Invesco Indexing, LLC

Index Methodology Change #1:

Remove index constituents that are no longer part of the investable universe

Affected indexes:
All Strategic Equity Indexes (5 in total)

Current index methodology treatment:
Each Strategic index is rebalanced on an annual basis in June. The foundational investable universe – the Invesco Indexing Investable (III) universe – is rebalanced quarterly (March, September, December), with a more comprehensive annual reconstitution in June. There are rare instances in which a security could be removed from the III universe as part of the quarterly rebalance yet remain as a constituent of a Strategic index until the June annual rebalance.

New index methodology treatment:
In order to align constituents of the Strategic indexes with their underlying investable universe, any security deleted from the investable universe at a quarterly rebalance that is also a constituent of a Strategic index will be deleted from the index at that time. The weight of the deleted security will be redistributed across the remaining index constituents on a *pro rata* basis.

Effective date:
June 2019 index rebalance

Index Methodology Change #2:

For monthly rebalances, expand the list of minimum criteria necessary for a current index constituent to qualify for continuing index membership

Affected indexes:
All Fixed Income Factor Indexes (10 in total)

Current index methodology treatment:
At each monthly rebalance, securities that are new to the investable universe must meet a number of minimum criteria to be added to one of the Fixed Income Factor indexes. In addition to a minimum factor score rank, other measures of eligibility include credit rating, face value outstanding, years to final maturity, and other technical features (such as coupon type). Existing index constituents, meanwhile, only need to meet a minimum factor score rank to remain a member of the index; the other criteria do not apply.

New index methodology treatment:
To retain membership in an index, existing constituents will need to meet minimum criteria in all categories used to determine initial index membership eligibility, not just minimum factor scores. Other than factor scores, which will continue to have more stringent requirements for initial entry, the eligibility requirements will be the same for new and existing constituents.

Effective date:
June 2019 index rebalance

Index Methodology Change #3:

When determining the largest bond(s) by issuer, include additional criteria to avoid ambiguity in the case of two (or more) bonds of the same size

Affected indexes:
All Fixed Income Factor Indexes (10 in total)

Current index methodology treatment:
When defining the universe of eligible securities for the Fixed Income Factor indexes, Invesco Indexing seeks to include the most liquid bonds by limiting universe membership to the largest single bond (largest five bonds for the Emerging Markets Debt indexes) by issuer based on face value.

New index methodology treatment:
There are times that an issuer may have more than one bond outstanding with the same face value. In order to avoid ambiguity when selecting the largest bond(s) and to continue to seek representation from the most liquid bonds, Invesco Indexing will include additional criteria when identifying a bond as a potential investable universe constituent. In the case of multiple bonds from the same issuer with the same face value outstanding, the years to maturity will be compared, with a preference given to bonds with a shorter remaining life. If the years to maturity are exactly the same, the vintage of the bonds will be compared, with preference give to younger bonds. If the previous criteria are identical, for USD-denominated securities, preference will be given to SEC-registered bonds, followed by Rule 144A bonds, followed by Reg S bonds. For non-USD-denominated securities, Reg S bonds will be preferred over Rule 144A bonds. Using these additional criteria should prevent any ties when determining the largest, most liquid bond by issuer.

Effective date:
June 2019 index rebalance

Index Methodology Change #4:

Set effective maturity date to pre-refunded date for all pre-refunded municipal bonds with pre-refunded dates.

Affected indexes:
All Nasdaq BulletShares® Municipal Bond Indexes (10 in total)

Current index methodology treatment:
Eligible pre-refunded municipal bonds are treated as callable bonds to determine their effective maturity dates and, hence, their index assignment. Specifically, if the bond's first call date is within 13 months of maturity and has a par call price, then the effective maturity shall be its actual year of maturity. In other cases, the effective maturity shall be its actual year of maturity unless the yield to next call date is less than the yield to maturity, in which case its effective maturity shall be the year of the next call date.

New index methodology treatment:

The effective maturity of eligible pre-refunded municipal bonds with a known pre-refunding date shall be the year of the pre-refunded date.

Effective date:
January 2019 index rebalance