NASDAQ OMX
Global Indexes

ADDRESSING SHORTCOMINGS OF TRADITIONAL BOND INDEXES THROUGH UNIQUE INDEX CONSTRUCTION

A Closer Look at the NASDAQ LadderRite Corporate Bond Indexes

The launch of the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index marks a new era in fixed-income indexing. Unlike traditional bond indexes, which were originally developed to serve as performance benchmarks for active bond managers and traders, the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index has been designed with the specific objective of providing a better bond index for users of increasingly popular passive fixed income investment products.

In 1973, some 80 years after Charles Dow introduced the Dow Jones Industrial Average, a now-defunct investment bank created the world's first bond index. The index filled a void in the marketplace, and has been followed by the introduction of numerous other bond indexes. Many of the index construction rules employed by early bond indexes became standard across the fixed income index indexing industry and have remained so to this day. These include:

Minimum Maturity Rules. Bond indexes that employ minimum maturity rules remove bonds a certain period of time before they mature (usually one year), requiring funds that track them to sell bonds before they mature.

Non-Targeted Duration. Traditional bond indexes are market value weighted, do not seek to maintain a constant duration and always reflect the weighted average duration of their constituents.

Non-Turnover Optimized Rebalancing Processes. Traditional bond indexes do a complete rebalancing on a regular basis, which can generate costly portfolio turnover for funds that track them.

With passive fixed income investing more popular than ever, the time has come to revisit the methodologies underlying traditional bond indexes to determine whether they can be modified to better serve investors. The NASDAQ LadderRite 0-5 Year USD Corporate Bond Index answers the shortcomings of traditional bond indexes by employing index construction rules specifically tailored to the needs of investors.

Minimum Maturity Rules

Of all the index construction rules employed by traditional bond indexes, perhaps none make less sense than minimum maturity rules. These rules remove bonds from an index at a pre-specified maturity mark, typically one year for most indexes. By forcing funds that track traditional bond indexes to sell bonds before they mature, **minimum maturity rules generate unnecessary trading**

costs that reduce risk-adjusted returns. Moreover, because market participants are aware of minimum maturity rules, traditional bond indexes are vulnerable to index front running, which can further increase trading costs for the funds that track them.

One academic paper that examined the impact of minimum maturity rules on fund performance observed that "the performance of traditional fixed index funds is being negatively impacted by minimum maturity rules established by the indexes that these funds seek to replicate."[1] The authors of the paper demonstrated that the relaxation of minimum maturity rules could result in improved risk-adjusted performance for index-tracking funds.

The NASDAQ LadderRite 0-5 Year USD Corporate Bond Index seeks to minimize portfolio turnover by holding bonds until they mature. Bonds are only removed from the index before maturity if they are called by the issuer or otherwise become ineligible for inclusion in the index. By holding bonds to maturity, the Index also prevents index front running.

Non-Targeted Duration

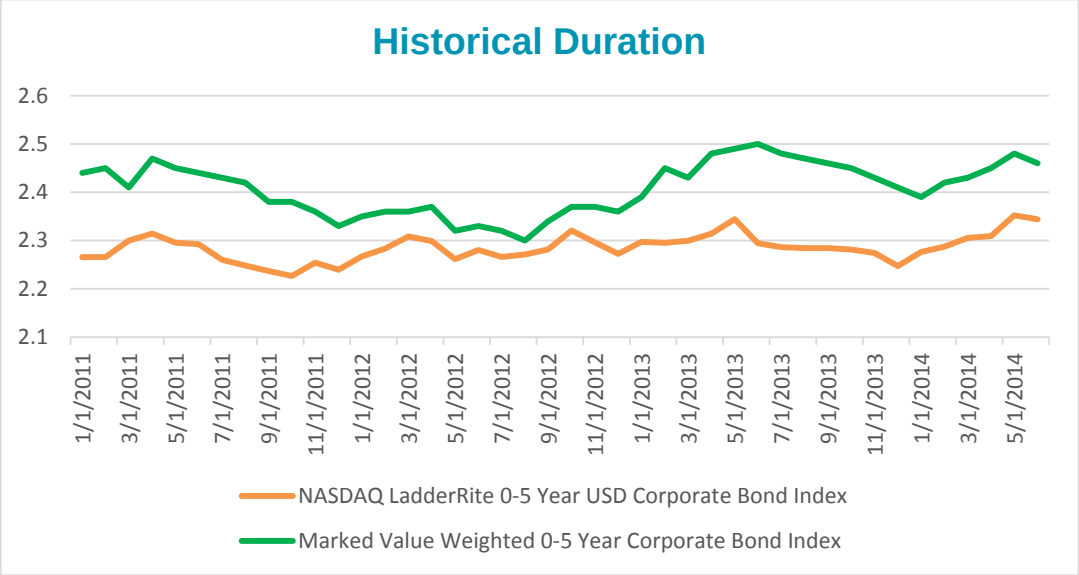
Building on the teachings of modern portfolio theory, traditional bond indexes employ market value weighting methodologies. While much of the criticism of market value weighting in bond indexing has focused on the credit impact of assigning higher portfolio weightings to the most indebted issuers, of greater significance is the impact that market value weighting can have on the duration profile of an index over time.

Market value weighting can cause the duration profiles of index portfolios to fluctuate because the weighted average maturity of bonds in an index's universe of eligible bonds will change over time so long as index constituents are market value weighted without regard to maturity. This is because the market value of eligible bonds will not necessarily (or even likely) be distributed uniformly across maturity years. Some years of maturity will have more debt outstanding (in market value terms) than other years and will disproportionately influence an index's duration as the underlying bonds move toward maturity.

The NASDAQ LadderRite 0-5 Year USD Corporate Bond Index addresses the risk of unanticipated duration changes by targeting an equal weighting for each maturity year in its portfolio. Since there are five years of maturity covered by the index, this means that the index targets a 20% allocation to each year of maturity. Within each year of maturity, constituents are market value weighted.

By targeting an equal weighting across each year of maturity, the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index ensures that its duration will not fluctuate. The chart below compares the historical duration of the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index against the historical duration of a market value weighted 0-5 Year corporate bond index.

[1] Decosta, Leng and Noronha (2013).



The historical duration of the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index (ranging from 2.23 to 2.35) tends to be slightly lower than that of the market value weighted 0-5 year corporate bond index (ranging from 2.30 to 2.50). This can be attributed to the turnover-optimized rebalancing process the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index uses (see below for more), which uses index cash flows as a constraint on the amount of rebalancing that is done.

More importantly, the duration of the NASDAQ LadderRite 0-5 Year USD Corporate Bond Index is significantly less volatile over time, with a standard deviation of 0.028 compared to 0.054 for the market value weighted 0-5 year corporate bond index.

The degree of duration fluctuation in a market value weighted index that can be expected will depend upon the number of years covered by the index. Those indexes that cover a broader spectrum of maturities will see greater volatility in their duration profiles over time.

Non-Turnover Optimized Rebalancing Processes

All securities indexes undergo a periodic rebalancing/reconstitution process to adjust index constituent weightings, to incorporate newly eligible securities into the index and delete ineligible securities from the index while also deleting any cash proceeds from dividends, interest payments or other cash flows provided by index constituents (e.g., proceeds from called or matured bonds) since the last rebalancing of the index.

Under traditional approaches to index rebalancing, the amount of cash flows provided by index constituents since the last rebalancing of the index has no influence over the rebalancing process. Rather, traditional indexes typically follow a two-step rebalancing process: (1) eligible index constituents are identified through the application of a series of screens; and (2) eligible index constituents are then weighted according to a predetermined methodology (usually market valuation, but sometimes using other metrics).

The traditional index rebalancing process generates a portfolio that precisely reflects a given set of index rules, but often does so at the expense of investability. This is because it reweights every security in the portfolio without any regard for how the cash balances in the portfolio could

be used to optimally rebalance the portfolio. The result is unnecessarily high turnover of index constituents. Such turnover is particular costly for passive bond funds if it forces them to sell small quantities of bonds in odd lots.

NASDAQ's patent-pending Turnover Optimized Portfolio (TOP) Rebalancing Process™ uses index cash flows since the last index rebalancing as a constraint on the amount of index rebalancing that occurs. Under the TOP Rebalancing Process, the traditional index rebalancing process serves as a tool to produce a target portfolio that guides the application of index cash balances. The result is a three-step rebalancing process: (1) eligible index constituents are identified through the application of a securities of screens; (2) eligible index constituents are then weighted according to a predetermined methodology to create a target portfolio; and (3) index cash balances are then applied to eligible index constituents in proportion to the extent they are underweighted relative to the target portfolio.

Using the TOP Rebalancing Process eliminates forced odd-lot portfolio sales while delivering index risk and return characteristics that are substantially identical to that of an index that uses the traditional rebalancing process.

The NASDAQ LadderRite 0-5 Year USD Corporate Bond Index targets the needs of passive fixed-income investors by addressing the shortcomings of traditional bond indexes. By holding bonds to maturity, maintaining a targeted duration and employing a turnover-optimized rebalancing process, the Index reduces tracking costs and offers investors the ability to precisely control duration exposure.

MORE INFORMATION:

View performance data at https://indexes.nasdaqomx.com/Index/Overview/LDRIG05

Index Data Sales +1 301 978 5307 or 45 33 93 3366, indexdatasales@nasdaqomx.com

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