Measuring the ability of a fixed income manager to deliver excess return relative to a benchmark is a much more complicated proposal than that of an equity manager. The Bloomberg Barclays U.S. Aggregate Index is considered the fixed income version of the S&P 500, which is widely used to represent the equity markets through a capitalization-weighted index of 500 stocks. But while the composition of the S&P 500 is based on 500 large companies listed on the New York Stock Exchange or the NASDAQ and selected by a committee, the Bloomberg Barclays U.S. Aggregate Index is strictly rules-based. As we will illustrate below, the methodology utilized to construct the Index serves as an attempt to represent the U.S investment grade fixed income markets; but in limiting potential components, the rules-based nature of the benchmark creates a variety of opportunities to capture inefficiencies in the marketplace.

Measuring the ability of a fixed income manager to deliver excess return relative to a benchmark is a much more complicated proposal than that of an equity manager. The Bloomberg Barclays U.S. Aggregate Index is considered the fixed income version of the S&P 500, which is widely used to represent the equity markets through a capitalization-weighted index of 500 stocks. But while the composition of the S&P 500 is based on 500 large companies listed on the New York Stock Exchange or the NASDAQ and selected by a committee, the Bloomberg Barclays U.S. Aggregate Index is strictly rules-based. As we will illustrate below, the methodology utilized to construct the Index serves as an attempt to represent the U.S investment grade fixed income markets; but in limiting potential components, the rules-based nature of the benchmark creates a variety of opportunities to capture inefficiencies in the marketplace.

**ASSETS MEASURED AGAINST THE BLOOMBERG BARCLAYS U.S. AGGREGATE INDEX**

- Institutional*: $2.5 Trillion
- Retail: $0.8 Trillion
- Active: $3.4 Trillion
- Passive: $0.3 Trillion

*Institutional includes but is not limited to separate accounts, pooled/commingled vehicles and institutional mutual funds.

Source: eVestment (while the information from eVestment is not all-inclusive, it serves as a representation to illustrate how widely the Index is used in the fixed income markets). Data as of March 31, 2018.
Birth of an Index

The origination of the Bloomberg Barclays U.S. Aggregate Index can be attributed to the development of a database-management system in the early 1970s. Art Lipson and John Roundtree of Kuhn Loeb and Company created the aforementioned program to maintain information on a group of eligible bonds concurrently, which provided a method for determining the total return of the grouping, or index. It was a bold innovation at the time, when bonds were rarely traded and investors tended to buy and hold them to maturity as they were unable to determine the exact current value of their bonds. Lehman Brothers purchased Kuhn Loeb and Company in 1977, and in 1986 launched the Lehman Brothers U.S. Aggregate Index. It would become the flagship of fixed income benchmarking for U.S. core fixed income portfolios, serving to represent the investable bond universe for a variety of investors. The Lehman Brothers U.S. Aggregate Index changed ownership (and name) when the index business was acquired by Barclays in 2008 after Lehman failed during the Financial Crisis, becoming the Barclays U.S. Aggregate Index. The most recent name change occurred in the summer of 2016 when Bloomberg acquired the index business from Barclays and renamed the index the Bloomberg Barclays U.S. Aggregate Index.

Similar to the evolution of its name, the Index rules for inclusion and its constituency have evolved, adapting to the ever-changing fixed income markets. The below chart is not all-inclusive of the changes in the Index, but they represent significant changes that have occurred over the years.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 1986</td>
<td>U.S. Aggregate Index introduced and backfilled with data to January 1976</td>
</tr>
<tr>
<td>January 1, 1992</td>
<td>Asset-backed securities (ABS) and mortgage-backed securities (MBS) added</td>
</tr>
<tr>
<td>January 1, 1998</td>
<td>U.S. Treasury inflation protected securities (TIPS) removed</td>
</tr>
<tr>
<td>July 1, 1999</td>
<td>ERISA-eligible commercial mortgage-backed securities (CMBS) added</td>
</tr>
<tr>
<td>January 1, 2008</td>
<td>U.S. MBS balloon securities and ABS manufactured housing removed</td>
</tr>
<tr>
<td>October 1, 2009</td>
<td>U.S. ABS home equity sector removed</td>
</tr>
<tr>
<td>January 1, 2011</td>
<td>Covered bonds become eligible and A1A tranches removed from CMBS portion</td>
</tr>
<tr>
<td>July 1, 2014</td>
<td>U.S agency CMBS added</td>
</tr>
<tr>
<td>June 1, 2017</td>
<td>Hybrid adjustable rate mortgages (ARMs) removed</td>
</tr>
</tbody>
</table>

Source: Barclays

When the Index launched in 1986, it contained 6,240 securities and represented $2.1 trillion in assets. At the end of the first quarter of 2018, it contained 9,868 securities and represented over $20 trillion in assets.

Rules for Inclusion and Rebalancing

The Index is maintained through the implementation of specific rules and limitations meant to control inclusion and conduct rebalancing in a specific manner. These rules are implemented via an advisory council that meets to determine any potential changes to the composition of the Index based upon market developments. The inclusion of agency CMBS in July 2014 is an example of the council’s efforts to provide a benchmark that more accurately represents the investment grade, U.S. dollar-denominated, fixed-rate taxable bond market. Each individual security eligible for inclusion must adhere to specific liquidity constraints based upon sector:

- Treasury, government-related and corporates: $300 million minimum par amount outstanding
- MBS: pool aggregates must have $1 billion par amount outstanding

The rules-based nature of the benchmark creates a variety of opportunities to capture inefficiencies in the marketplace.
• ABS: $500 million minimum deal size and $25 million minimum tranche size
• CMBS: $500 million minimum deal size with at least $300 million amount outstanding remaining in the deal and $25 million minimum tranche size

For the purposes of rebalancing, Bloomberg maintains two distinct versions of the Index: “Returns,” which is backward-looking, and “Statistics,” which is forward-looking. The “Returns” universe is rebalanced at month-end and consists of the universe of bonds that are used to calculate returns for the next month. The “Statistics” universe changes daily to account for bonds entering and dropping out of the Index. Unlike the different time periods for rebalancing mentioned previously, any changes to securities including ratings, sector classification, corporate actions, amount outstanding changes, and ticker changes are reflected daily in both the “Returns” and “Statistics” universes.

Index Limitations Lead to Criticism (and Opportunity)

Prior to the Financial Crisis, the Bloomberg Barclays U.S. Aggregate Index was considered the gold standard when it came to providing a benchmark for investors’ U.S. fixed income allocation. More recently, the Index has been criticized for being antiquated and not a true reflection of the investment opportunities in the market. Rules around inclusion have limited the Index’s exposure to certain areas of the market and limit the effectiveness in representing the investment grade U.S. fixed income market. The investment grade fixed income market, as measured by the Securities Industry and Financial Markets Association (SIFMA), consists of $36.7 trillion in assets (excluding municipal bonds and money market assets); however, the Bloomberg Barclays U.S. Aggregate Index represents just $20.0 trillion in assets.¹

An example of the rules limiting exposure to the overall market is evident in the ABS segment of the market. Per Barclays’ rules, the ABS portion of the Index contains only auto, credit card, and utilities. The total ABS market, as measured by SIFMA, contains a variety of subsectors available to investors, some of which have been growing substantially over the past several years and offer clients an investment-grade alternative to other areas of the market. Property Assessed Clean Energy (PACE) bonds offer exposure to green energy with significant levels of credit enhancement through the securitization of energy-efficient additions, such as solar panels, to homes through liens on consumer property. The PACE securitization market has grown from its initial offering of roughly $100 million in 2013 to its current level of $4.0 billion.² (Please refer to our April 2018 Insights piece on PACE for further detail on the asset class.)

Persisting with market data is a common concern, and Investors in the Index are now assuming a greater level of interest rate risk while earning almost half of what had been earned in the late 1990s.

![Graph](https://example.com/graph.png)

Source: Barclays, SIFMA. Data as of March 31, 2018.

¹As of March 31, 2018.
²Includes but is not limited to cell phone contracts, consumer, franchise, PACE, servicing advances, solar and timeshares.
The other sectors in the Index suffer from the same lack of inclusion. SIFMA reports the residential MBS market as roughly $8.1 trillion, but the Index contains only $5.6 trillion and is made up entirely of agency MBS pass-through securities that meet Index criteria. In addition to the $1.2 trillion in additional MBS pass-through securities not represented, the Index also excludes non-agency residential MBS ($776.3 billion) and agency collateralized mortgage obligation MBS ($1.1 trillion), which are both areas of the market that can deliver strong risk-adjusted returns relative to plain vanilla pass-through mortgages.

Even Treasuries, the most liquid and arguably one of the safest securities in the fixed income universe, are not well-represented in the Index. Despite being the largest allocation at nearly 37% of the Index, this represents roughly half of the outstanding Treasuries market. The following segments are excluded from the benchmark:

- $2.3 trillion in Treasury bills are excluded due to maturity constraints.
- $1.3 trillion in TIPS.
- Treasury Separate Trading of Registered Interest and Principal Securities (STRIPS) are excluded as they would be considered a double count. These securities are constructed by separating out cash flows associated with Treasury bonds and notes, but can offer incremental value relative to traditional Treasury notes and bonds.

**Impact of the Financial Crisis**

In response to the Financial Crisis, the U.S. government ramped up Treasury issuance in order to pay for programs designed to support the country’s economic path to recovery. From January 2008 through March 2018, the federal government issued over $10 trillion in debt compared to only $1.1 trillion issued from 2000 to 2007. As the Bloomberg Barclays U.S. Aggregate Index is a reflection of the fixed income markets, the allocation to Treasury securities increased substantially. As illustrated in the chart below, the allocation to Treasuries rose from 22.4% at the end of 2007 to 37.2% after the first quarter of 2018. At the same time, the allocation to securitized assets (ABS, CMBS and MBS) contracted from 45.1% to 30.6%, while the allocation to corporate debt increased from 19.6% to 25.3%.

> While Diamond Hill portfolio managers are measured from a performance standpoint relative to the benchmark, it is our goal to exploit ... inefficiencies that exist between the benchmark and the investable universe to deliver strong risk-adjusted returns to our clients.

Source: Barclays
With the Fed maintaining a zero interest rate policy from 2009 to 2015 and only increasing rates a handful of times since, the composition of newly issued bonds has resulted in lower-yielding, longer-dated securities. Newly issued securities eligible for the Index have caused a dramatic shift in the characteristics of the various sectors.

<table>
<thead>
<tr>
<th></th>
<th>Yield to Worst</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>December 2007</td>
<td>March 2018</td>
</tr>
<tr>
<td>Treasury</td>
<td>3.59%</td>
<td>2.55%</td>
</tr>
<tr>
<td>Corporate</td>
<td>5.79%</td>
<td>3.76%</td>
</tr>
<tr>
<td>MBS</td>
<td>5.39%</td>
<td>3.30%</td>
</tr>
</tbody>
</table>

Source: Barclays

As the sectors’ duration extended over the past decade and yields dropped, the impact on the Bloomberg Barclays U.S. Aggregate Index is apparent. And the gap that began during the Financial Crisis has continued to expand, with the Index now yielding 3.12% with a duration of over six as of the end of the first quarter in 2018. Investors in the Index are now assuming a greater level of interest rate risk while earning almost half of what had been earned in the late 1990s.

Opportunities Beyond the Benchmark

The Diamond Hill Fixed Income team manages our core bond style in a manner that can be considered benchmark-aware. While Diamond Hill portfolio managers are measured from a performance standpoint relative to the benchmark, it is our goal to exploit the aforementioned inefficiencies that exist between the benchmark and the investable universe to deliver strong risk-adjusted returns to our clients. Utilizing areas of the market not included in the benchmark methodology expands the opportunity set beyond the standard securities found in the Index and helps to differentiate us from other core bond strategies. Our philosophy and process is based upon bottom-up security selection and relative value, leading to a considerable allocation outside of the benchmark-eligible universe which can serve to provide diverse sources of alpha.

“Our philosophy and process is based upon bottom-up security selection and relative value, leading to a considerable allocation outside of the benchmark-eligible universe which can serve to provide diverse sources of alpha.”
The mortgage sector illustrates the difference between the compositions of the benchmark and where our portfolio managers have found value for our clients. As discussed previously, the Index does not include non-agency residential MBS or agency collateralized mortgage obligations (CMOs), both of which are large and diverse segments of the market. While the non-agency MBS market has seen its relative value reduced the further removed we are from the Financial Crisis, CMOs have historically provided an excellent opportunity to deliver exposure to the mortgage market while insulating investors from both extension and prepayment risk. A demonstration of the extension and prepayment differences between CMOs and pass-through mortgages can be explained by looking at the changes in duration as rates have climbed higher since the low point for interest rates in July 2016.

ABS is another area of the market that offers diversification not found in the benchmark, while Treasury STRIPS and TIPS provide non-benchmark exposure to the Treasury market. Exploiting these and other opportunities can provide clients with exposure to the Bloomberg Barclays U.S. Aggregate Index while delivering sources of alpha relative to the Index. At Diamond Hill, our fixed income team’s philosophy and process focuses upon building diverse and transparent portfolios of cash bonds without the utilization of derivatives in order to deliver a portfolio that is structured to deliver strong risk-adjusted returns in a variety of market environments.