July 2024

Hidden Complexity: Challenges of Managing to the Agg

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The Bloomberg US Aggregate Bond Index ("the Agg") is universally regarded as the flagship benchmark for the US fixed income markets. The index focuses on investment-grade, US-dollar-denominated, fixed-rate taxable debt securities.

Here, we explore the Agg by delving into the index's origins and characteristics and breaking down its composition. We also take a further look at Mellon's approach to tracking the Agg, using a replication methodology known as stratified sampling.

What is the Agg? A Closer Look at Fixed Income's Foremost Benchmark

Background & History

Launched in 1986 as the Lehman Aggregate Bond Index, the Agg combined the newly created US Mortgage-Backed Securities Index with the US Government/Credit Bond Index previously established in 1976 to create the first comprehensive multisector US bond market index.

Following the collapse of Lehman Brothers Inc. in 2008, the index was renamed the Barclays Capital Aggregate Bond Index. Bloomberg acquired Barclays' index and risk analytics business in 2016 and subsequently rebranded the index in 2021 as the Bloomberg US Aggregate Bond Index. At its inception in 1986, the Agg had a market value of $361 billion and contained 4,514 securities. Today, the index contains over 13,500 securities with a market value of more than $26.9 trillion.[1]

Key Characteristics

As of the end of December 2023, Morningstar[2] was tracking more than $5.2 trillion of mutual fund and exchange-traded fund (ETF) assets using fixed income benchmarks. Over $4.1 trillion of these assets used a benchmark from the Bloomberg family of fixed income indices, with $2.3 trillion tracking the Agg and various iterations.

Morningstar Top 5 Fixed Income Index Families: Active and Index Mutual Funds and ETFs

	Assets	Percent of Total
Morningstar Total	**$5,250,982,853,744**	**100.0%**
Bloomberg	**$4,121,131,782,691**	**78.5%**
US Aggregate	$2,338,880,930,887	44.5%
US Credit	$321,981,297,369	6.1%
US Government/Credit	$286,361,992,124	5.5%
US Treasury	$222,787,428,356	4.2%
US TIPS	$184,815,134,335	3.5%
Global Aggregate ex-US	$147,569,867,692	2.8%
US High Yield	$143,664,268,354	2.7%
All other Bloomberg benchmarks	$475,070,863,574	9.0%
ICE BofA	**$751,927,813,987**	**14.3%**
FTSE	**$77,883,625,624**	**1.5%**
JP Morgan	**$77,132,448,422**	**1.5%**
Markit	**$66,783,606,695**	**1.3%**

Source: Morningstar, as of December 29, 2023.

The wide popularity of the Agg can be attributed to:

- **Broad market representation:** With over 13,500 securities spanning the yield curve and maturities ranging from one to 30 years, the Agg represents more than 85% of the market value of the investable US fixed income markets.[3]
- **Transparency:** The Agg is based on clearly defined rules and quantifiable criteria, published by Bloomberg, that objectively govern the maintenance and composition of the index, and it is rebalanced monthly to ensure it remains representative of the US fixed income markets over time.
- **Diversification:** The Agg provides diversified exposure to US fixed income securities including government debt, corporate debt and securitized bonds such as mortgage-backed securities (MBS), asset-backed securities (ABS) and commercial mortgage-backed securities (CMBS).
- **Information availability:** Extensive data on index composition, performance, risk characteristics and upcoming index changes are available both daily and historically.
- **Access and usage:** The Agg is the primary benchmark for a wide array of investment vehicles including mutual funds, exchanged-traded funds (ETFs), separately managed accounts (SMAs) and bank collective funds or collective investment trusts (CITs).

Rules & Composition

Benchmarks fulfill a crucial role in investing, providing investors with a starting point for asset allocation decisions, guiding portfolio construction and serving as the basis for performance and risk measurement. The Bloomberg US Aggregate Bond Index follows an objective and rules-based methodology coupled with readily available daily data to ensure clarity across these factors over time.

On a daily basis, Bloomberg maintains and publishes two universes for the Agg. The Returns, or Backward, universe is struck at the beginning of the month and held static until the following month-end. As its name implies, the Returns universe contains all the bonds that contribute to the performance of the benchmark during that month. The Statistics universe, also known as the Forward or Projected universe, reflects the expected composition of the index after adjusting for bonds entering or exiting the index based on the stated methodology. At the close of business on the last day of the month, the Statistics universe will become the new Returns universe for the following month. Any cash that accrues in the Returns universe from coupons, maturities and paydowns will be included in index returns for that month but will not be reinvested in the index until the rebalancing turn at month-end.

Though not an exhaustive list, some of the Agg's more significant inclusion rules include:

- **Credit quality:** Bonds must be investment-grade, specifically Baa3/BBB-/BBB- or higher using the middle rating from the credit-rating agencies, Moody's, Standard & Poor's (S&P®) and Fitch.
- **Amount outstanding:** $300 million par for US Treasury, government and corporate securities; MBS must have $1 billion par outstanding for pool aggregates; ABS and CMBS must have a minimum deal and tranche sizes of $500 million and $25 million, respectively.
- **Maturity:** At least one year until final maturity, weighted average maturity (MBS) or remaining average life (ABS and CMBS).
- **Coupon:** Eligible coupon types include fixed-rate securities, callable fixed to floating securities (only eligible during their fixed-rate term) and bonds with step-up coupons that change according to a predetermined schedule.

In addition, eligible securities must be fully taxable and may include both senior and subordinated securities. Constituent securities must also be registered by the US Securities and Exchange Commission (SEC) or issued as 144A securities with registration rights. Global bonds are also included as eligible securities.

Mortgage-backed securities represent a large percentage of the Agg—over 26.62% of the index, as shown in the grid below. The sector has nuances due to the uniqueness and vast size of this market. This portion of the index tracks fixed-rate mortgage pass-through securities issued by the Government National Mortgage Association (Ginnie Mae or GNMA), Federal Home Loan Mortgage Corporation (Freddie Mac or FHLMC) and Federal National Mortgage Association (Fannie Mae or FNMA). The index takes a universe of more than a million eligible to-be-announced (TBA) deliverable fixed-rate MBS pools and creates cohorts (or generics) based on certain pool characteristics. These cohorts are based on agency, coupon and origination year, among other factors. On December 1, 2022, the index methodology refined cohort pricing to include specified pools based on storied factors such as loan balance (low), loan-to-value ratio (high), specified geography, non-owner occupancy credit score (low) and worst-to-deliver (all else) to better reflect how these mortgages trade in the market.

When Mellon uses stratified sampling, which we will discuss in more detail later, we use multiple risk factors for the MBS sector. Since all mortgage-backed securities are highly rated, quality is not typically a significant risk factor.[4] We look to closely match the index based on the primary drivers of the sector such as agency, coupon and origination year. Furthermore, we will further sample based on the storied bond factors. Because mortgages have idiosyncratic prepayment risk, closely matching these multiple risk factors helps to keep the portfolio's paydowns and performance in line with the benchmark.

What Does the Agg Look Like?

As of December 29, 2023, the Bloomberg US Aggregate Bond Index had the below structure and characteristics:

	# of Bonds	Market Value ($mil)	Weight (%)	Yield (%)	Duration (%)	Spread (bps)	Average Quality	Available History
US Aggregate	**13,334**	**26,665,228**	**100.00%**	**4.53**	**6.24**	**42**	**AA2/AA3**	**1976**
US Treasury	285	11,102,814	41.64%	4.08	6.18	0	AA1/AA1	1973
Government-Related	1,230	1,273,468	4.78%	4.59	5.28	48	AA2/AA3	1994
Agencies	549	448,672	1.68%	4.45	3.38	22	AA1/AA2	1994
Local Authority	344	215,772	0.81%	4.77	8.10	75	AA2/AA3	1994
Sovereign	174	257,465	0.97%	5.20	8.72	119	BAA1/BAA2	1976
Supranational	163	351,559	1.32%	4.23	3.45	11	AAA/AA1	1976
Corporate	7,756	6,628,376	24.86%	5.06	7.09	99	A3/BAA1	1973
Industrial	4,485	3,864,297	14.49%	4.97	7.83	90	A3/BAA1	1973
Utility	1,150	578,126	2.17%	5.11	8.81	105	A3/BAA1	1973
Financial Institutions	2,121	2,185,954	8.20%	5.20	5.34	112	A2/A3	1973
Securitized	4,063	7,660,571	28.73%	4.72	5.76	51	AAA/AA1	1997
US Mortgage-Backed Securities	938	7,098,486	26.62%	4.68	5.89	47	AA1/AA1	1976
Asset-Backed Securities	481	127,298	0.48%	4.96	2.70	68	AAA/AA1	1991
Commercial Mortgage-Backed Securities	2,644	434,787	1.63%	5.27	4.42	126	AAA/AA1	1999
Covered Bonds	0	0	0.00%	0.00	0.00	0	--/--	2012

Source: Bloomberg, as of December 29, 2023. Note: Average quality in this table is provided by Bloomberg, which in turn uses its publicly disclosed index quality rating methodology.

Securities in the Agg are categorized into a four-level hierarchy. At the highest level, Class 1 sectors include US Treasury, government-related, corporate and securitized. Those four sectors are further broken down at the Class 2 level, where, for example, corporates are further classified as financial institutions, industrials or utilities. Class 2 securitized sectors include US MBS, ABS, CMBS and the largely unused covered bonds sector. Classes 3 and 4 introduce further refinements and when fully expanded include over 60 discrete sectors.

What is Not Included in the Agg?

Although the Bloomberg Aggregate Bond Index is considered the flagship benchmark for the US bond market, there are many securities not included in the index. Asset classes not included in the Agg include:

- High-yield corporate bonds
- US Treasury Inflation-Protected Securities (TIPS)
- US Treasury Separate Trading of Registered Interest and Principal of Securities (STRIPS)
- Tax-exempt municipal bonds
- Bonds issued under 144A without registration rights
- US dollar-denominated emerging market bonds
- Eurodollar bonds
- Bank loans
- Floating-rate securities
- Collateralized Mortgage Obligations, including Principal-Only and Interest-Only

Nonetheless, the Agg represents the broad spectrum of fixed income securities. As a measure of the global investment-grade, fixed-rate debt market, it continues to be closely watched by many investors.

Our Approach to Tracking the Agg

The Bloomberg US Aggregate Bond Index is a complex and broad benchmark that can be a daunting obstacle for investment managers to measure against, let alone outperform. Recently published research from S&P Dow Jones Indices states that "...active outperformance, when it occurs, tends to be the result of luck rather than genuine skill."[5] Additional findings in the research:

- Less than 35% of actively managed domestic investment-grade portfolios whose performance placed them in the top half of their category at the end of 2021 managed to maintain their record over the subsequent two years.

- Only 20% of actively managed domestic investment-grade portfolios managed to maintain top-quartile performance over three consecutive 12-month periods ending December 2023.

- Among all actively managed domestic investment-grade portfolios whose performance over the 12 months ending December 2019 placed them in the top quartile, less than 6% remained in the top quartile in each of the four subsequent one-year periods ending in December 2023.

Challenges for Active Management

Active fixed income managers can employ multiple strategies designed to outperform the Agg, including interest rate anticipation, yield-curve positioning, sector rotation, security selection and out-of-index securities. Yet, as shown by S&P Dow Jones Indices, the lack of persistent outperformance by active fixed income managers increases the level of difficulty for asset owners—not only do they need to pick the right manager, but they also need to do so consistently over time.

In addition, the structure of the fixed income markets can pose additional challenges for investment managers. Some of these challenges include:

- **Turnover:** Most fixed income benchmarks rebalance monthly to capture the substantial volume of changes that can take place over the course of a month, including new securities, maturities, paydowns and ratings changes among other factors. In contrast, most equity benchmarks rebalance quarterly or less frequently.
- **Costs:** Despite the growth in electronic trading, today's fixed income markets are still an over-the-counter market, with transaction costs that are generally higher than equity markets. Furthermore, transaction costs are not reflected in the returns of the index.
- **Multiple issues**: Unlike the equity markets, most fixed income issuers have multiple bonds outstanding at any given time. For example, the corporate issuer with the highest weight in the Agg was a financial institution, with 70 bonds in the index as of March 29, 2024.[6]
- **Frequency of trading**: Some fixed income securities such as corporate bonds and ABS may not be available to trade on any given day as investors will often purchase these bonds at new issue with the intent to hold until maturity.

As an alternative, index (or passive) fixed income portfolio management is a time-tested strategy designed to achieve the risk and return of the Agg, without incurring the higher fees and additional risk of active management.

The primary goal of fixed income index management is to match the risk and return of the chosen index with the lowest possible tracking error. However, with more than 13,500 securities in the index and the structural inefficiencies outlined above, it is not feasible or cost-effective to fully replicate the Bloomberg US Aggregate Bond Index. We believe Mellon has the potential to deliver returns that closely track the aggregate bond index over time despite these difficulties.

How Mellon Manages Against the Agg

Mellon employs a sophisticated replication methodology known as stratified sampling. Stratified sampling recognizes that the risks in fixed income are predominantly systematic in nature and yet potentially flexible enough to accommodate the idiosyncratic risks present in certain sectors such as corporate bonds and MBS.

With stratified sampling, the index is separated into cells or segments based on common characteristics such as sector, issuer and rating, then by risk factors such as yield, spread, duration and convexity. Suitable securities are then selected to match each cell's market value and risk contributions. This example can help visualize stratified sampling in action:

Stratified Sampling and Bond Index

	2yr KRD	3yr KRD	5yr KRD	10yr KRD	30yr KRD
Sample Portfolio	-0.006	-0.011	-0.014	-0.020	0.001
Corporates	0.001	0.012	-0.008	-0.009	-0.002
Government-Related	0.003	-0.001	-0.007		
Securitized	-0.006	-0.013	-0.015	-0.013	
Treasurys	-0.005	-0.010	0.016	0.003	0.004

Source: Risk Exposure (REX), a Mellon Investments Corporation. (MIC) proprietary portfolio management system. Data as of February 13, 2024. KRD is the key rate duration. This example is being shown for illustrative purposes only. This should not be construed as providing any assurance as to the results that may be realized in the future from investments in MIC's strategies.

We believe our approach to index management enhances our ability track the return of the Agg while managing the risks associated with fixed income. Our experienced team consistently applies a methodology that aims to provide value for fixed income investors.

Nancy Rogers, CFA

Director, Head of Fixed Income Portfolio Management

Nancy is the head of fixed income portfolio management. She is responsible for the management of domestic and international fixed income index portfolios, including separate, commingled, and mutual fund accounts. She has experience in managing aggregate, government, credit and custom indexes.

Nancy has been in the investment industry and at BNY Mellon affiliates since 1987. Prior to her current role, she was a senior portfolio manager at Standish and portfolio manager at Mellon Bond Associates. Previously, she served in various functions such as trading, performance measurement, and portfolio accounting.

In 2012, Nancy was awarded the Pittsburgh quarterly Outstanding Leadership Team Award for her work with the management team on the Building Organizational Talent initiative.

Nancy earned an MBA in investments from Drexel University. She holds the CFA® designation and is a member of the CFA Institute and CFA Society Pittsburgh.

Theodore Bair Jr., CFA

SVP, Senior Investment Strategist

Ted is a senior investment strategist, responsible for articulating the firm's index strategies to clients, prospective clients and consultants to help grow and retain Mellon's index business. He works closely with sales and client service staff worldwide to guide the messaging and positioning of index strategies and to develop product solutions for client portfolios.

Previously, Ted oversaw attribution and risk analytics for Mellon's Active Fixed Income division. Prior to that, Ted held roles of increasing responsibility in fixed income trading and portfolio management for Mellon Bond Associates, followed by roles as a senior portfolio manager and investment strategist for Standish Asset Management and Cash Investment Strategies. Ted has been in the investment industry since 1995.

Ted earned a BA in finance from Westminster College and an MBA in finance from the University of Pittsburgh. He holds the CFA® designation

Endnotes

1. Source: Bloomberg, as of March 29, 2024.
2. Morningstar is an investment research firm that compiles and analyzes fund, stock and general market data.
3. Source: Bloomberg as of September 29, 2023. Uses US Universal Index as proxy for the US bond market. US Agg market value ($24.775 trillion), US Universal market value ($29.074 trillion) = 85.2%.
4. Rating refers to index quality rating and is published by Bloomberg according to their publicly disclosed methodology.
5. Source: S&P Dow Jones Indices, US Persistence Scorecard Year-End 2023.
6. Source: Bloomberg, as of March 29, 2024.

Disclosure

For more market perspectives and insights from our teams, please visit [www.mellon.com.](http://www.mellon.com)

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