

## US Taxable Municipal Bonds: Beyond the Basics

Preferential capital treatment, low correlations, historically stable ratings, and ESG friendly credits, have piqued institutional interest in the taxable municipal bond asset class.

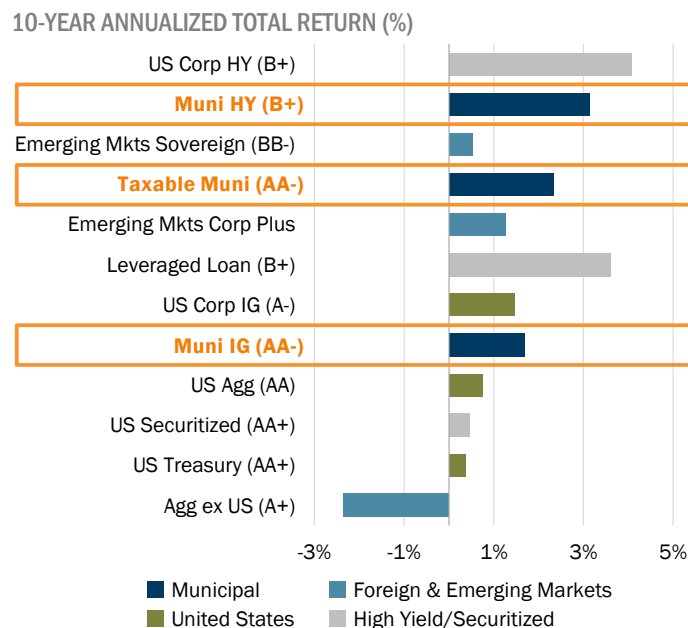
US retail investors have long dominated the US municipal bond market, but over the last decade, institutional interest in the sector has soared, particularly outside the US. So far, these non-traditional investors have been rewarded. Over the last 10 years, municipal bonds have performed well (Figure 1). Consequently, the taxable municipal sector's 2.3% annualized total return for the period handily outperformed the 1.5% return on US corporate investment-grade bonds, a staple in most institutional portfolios. But strong returns are just one of many reasons that non-traditional investors have ventured into the asset class. Taxable municipal bonds are also garnering interest due to their high quality ratings, inefficient pricing, low correlations, diversification to other asset classes and potential for liability matching.

### New Interest in an Old Sector

Institutional interest for U.S. municipal bonds was whetted in 2009, when the Obama Administration created the Build America Bond (BAB) program to stimulate an economic recovery from the Great Recession. At the time, many states and cities were having difficulty tapping the traditional, tax-

exempt municipal bond market to fund capital projects. As a solution, BABs subsidized the interest cost on taxable municipal bonds to make them affordable to issuers and broaden their potential investor base. Over the two years the program was in effect, issuance of taxable municipal bonds surged from \$24 billion in 2008 to \$85 billion in 2009 and \$152 billion in 2010. (SIFMA.org; U.S. Municipal Issuance)

**FIGURE 1: MUNICIPAL BONDS HAVE HISTORICALLY PERFORMED WELL**



Source: Bloomberg, ICE Data  
September 30, 2021 to October 31, 2022  
Please see disclosures at the end of this document for additional information including index descriptions. The above returns represent those of certain indices. **It is not possible to invest directly into an index. Past performance is not indicative of future results.**

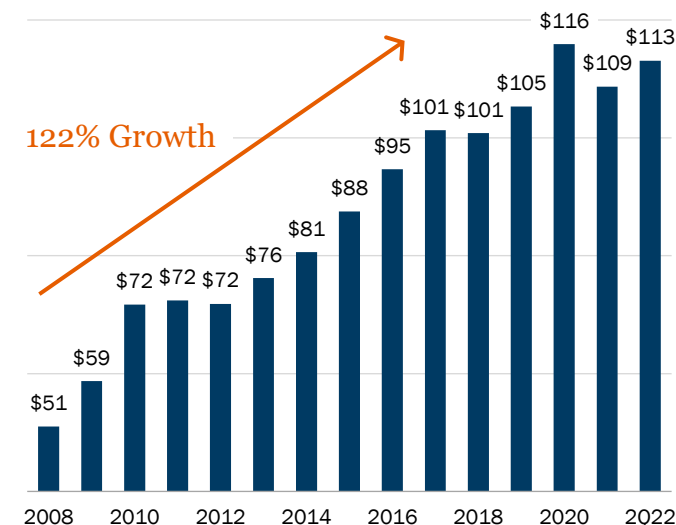
Supply piqued demand. Non-traditional investors learned that taxable municipals offered an array of structural benefits and can offer incremental return potential due to inefficient pricing in a fragmented market. Simply stated, what municipals lacked in liquidity, they made up for in higher yield spreads and total return potential. Diversification benefits and the possibility of lower capital charges<sup>1</sup> have resulted in increased foreign demand of taxable municipals. Foreign ownership has doubled from \$51 billion in 2008 to over \$113 billion as of June 30, 2022. (Figure 2).

Today, many institutional investors see taxable municipals as an attractive diversifier for their fixed income portfolio. Many of these investors welcome the historically higher credit quality and ratings of municipals versus other fixed income sectors.

In addition, non-US insurance and reinsurance firms like the potential for reduced capital charges. The European Union's Solvency II Directive could potentially reduce the capital charges on investments in bonds designated as "infrastructure corporates" by up to 25% relative to corporate bonds.<sup>2</sup> While

**FIGURE 2: FOREIGN OWNERSHIP: 122% GROWTH**

\$US Billions



Source: Federal Reserve Z.1 Statistical Release, Q2 2022 Report

#### MUNICIPALS—A PRIMER

U.S. municipal bonds are the primary funding source for U.S. infrastructure. State, county and local governments and agencies issue these tradeable debt instruments to build highways, airports, water and sewer plants, and other structures that provide essential services to the public. With nearly \$4.04 trillion in outstanding bonds, municipal bonds make up nearly 10% of the value of the \$46 trillion U.S. bond market. (Source: U.S. Federal Reserve Z.1 Statistical Release as of Q4 2021)

Interest income from most municipal bonds is not subject to federal income tax, so individual U.S. investors have long dominated the market; today, individuals own about 40% of the municipal bonds outstanding. (Source: 1Q 2022 SIFMA) Some taxable U.S. institutions, such as nuclear decommissioning trusts, have also invested in the asset class for decades. Tax-exempt U.S. entities and non-U.S. investors that aren't subject to U.S. taxation have generally stayed away, because the yields on tax-exempt municipals are generally lower than yields on other bonds with similar duration.

There has been a surge in taxable municipal supply over the last 12 months expanding the opportunity set for investors. We believe this trend will continue as cash strapped municipalities will look to re-finance higher coupon tax-exempt debt to achieve savings, which should keep taxable municipal issuance at elevated levels for the foreseeable future.

But not all muni bonds are tax-exempt: The U.S. tax code strictly limits the volume of tax-exempt municipal bonds for each of the thousands of issuers, and restricts the eligible purposes for issuing them. Issuers that need to issue more debt than allowed, or to fund a non-permitted purpose, tap the taxable municipal bond market. Institutional investors' recent increased appetite for municipal bonds is focused on the taxable category, which generally offers higher yields because their interest payments aren't tax exempt. \$840 billion in taxable municipal bonds were outstanding as of July 20, 2022. (Source: Bloomberg).

Municipals can also be categorized by their security features. About 30% of the taxable municipal index is made up of GOs "general obligation bonds," supported by the full faith and credit of the issuer. The rest are "revenue bonds," supported by a dedicated revenue stream, such as highway tolls or municipal water charges.

2022's taxable issuance has been heavily constrained by higher than anticipated rates environment that has made taxable advance refundings less appealing. However, we expect issuance to pick up for the remainder of the year, and remain at elevated levels.

1. Under Solvency II, capital requirements are determined on the basis of a 99.5% value-at-risk measure over one year, meaning that enough capital must be held to cover the market-consistent losses that may occur over the next year with a confidence level of 99.5%, resulting from changes in market values of assets held by insurers.

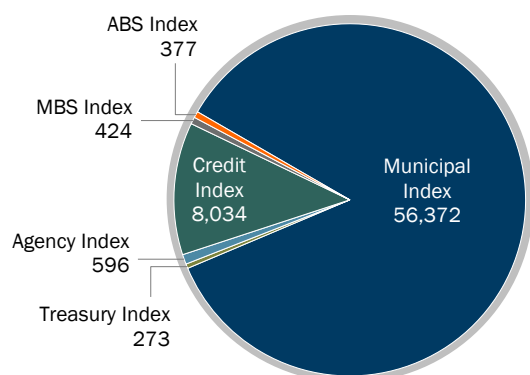
2. September 14, 2017 the treatment for infrastructure corporates was published in the Official Journal of the EU, June 8, 2017.

the regulatory scheme applies only to EU-based insurers, it is becoming the de-facto risk framework throughout the world. For instance, many companies and regulators in Asia are closely following the development, with a view to obtaining similar regulatory treatment (e.g., Japan) or adopting elements of Solvency II in their own risk-management initiatives.<sup>1</sup> An allocation to taxable municipal bonds that meets Solvency II criteria could help improve the capital efficiency of these insurers' portfolios.

While many investors have been focusing on the corporate bond and equity markets for their Environmental, Social and

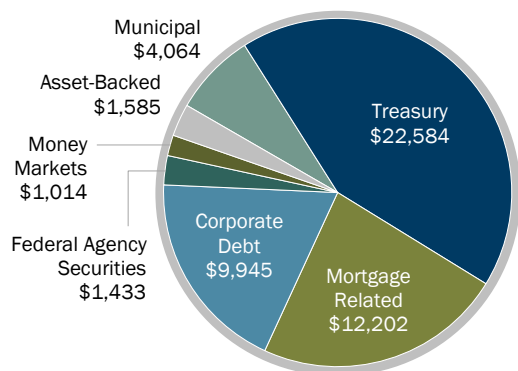
Governance (ESG) investment strategies, we believe that the municipal bond market is a natural fit for strategies with ESG considerations. Municipal bonds are the primary funding source for infrastructure projects in the United States. Many of these projects address environmental and social considerations and are also aligned with the sustainable development goals, including conservation projects for water and wastewater systems, wind farms, public education, non-profit hospitals, public transport and affordable housing. Our fundamental municipal credit analysis regularly takes ESG considerations into account when determining the underlying strength of a municipal credit.

**FIGURE 3: US\$4.04 TRILLION U.S. BOND MARKET  
7X THE AMOUNT OF ISSUERS AS THE CORPORATES**  
Indices by Number of Issues



Source: Bloomberg. Data as of June 30, 2022

**Outstanding U.S. Bond Debt | \$US Billions**



Data as of December 31, 2021. Source: The Securities Industry and Financial Markets Association (SIFMA),

### Pricing Inefficiency Creates Opportunity

The municipal bond market is highly fragmented, and most issues are small; many are too tiny to be included in a market index. Yet the municipal bond index still includes approximately 56,000 issuers, over 80% of all issuers in the total US bond index (Figure 3). In contrast, the corporate bond market, with more than twice as much value, has far fewer issuers: the corporate credit index includes less than 8,000. The Treasury market is huge, with over \$15 trillion in value, but the index includes just 270 issues.

Market fragmentation, limited sell-side research and the prevalence of buy and hold investors often times leads to inefficient pricing. Pricing inefficiencies create opportunity for active investors with an edge in credit research and trading to seek greater yield and total return potential than the sector's typical buy-and-hold investors reap.

### Competitive Yields and Long Durations

Institutional appetite for yield has also driven the sector's rapid growth over the last decade. With central banks around the world using quantitative easing programs to stimulate the global economy for much of this period, interest rates declined to historic lows. Yields on many sovereign bonds eventually fell into negative territory. Many investors have sought to enhance yields by increasing corporate or emerging-market credit risk during this time. Additionally, even in today's rising rate environment, Taxable municipal bonds have still maintained the yield advantage. In September 2022, yields on double-A (AA) rated taxable municipal bond of eight years or longer were 106 basis points higher than yields on comparable Treasuries (Figure 4). Also evident is the yield advantage of Taxable Municipals over comparably rated US Corporates.

1. Solvency II Implications for Asian Life Insurers, Ernst & Young, Copyright 2011 EYGM Ltd. Please see first section in the Appendix "Municipals as Liquid Infrastructure Investments Under Solvency II" for additional information.

Duration is another key driver of growth. Because capital projects financed with taxable municipal bonds generally last for decades, they are typically financed with longer maturing bonds. Over 40% of taxable municipals outstanding have maturities of 10 to 20 years; another 22% are even longer (Figure 5). Institutions seeking to immunize their long-dated obligations have welcomed this source of long-duration assets to match their long-term liabilities. Historically, issuance in this asset class was dominated by longer maturities, however, looking closely at 2020 through 2022 YTD issuance, the breakdown has evolved. Approximately 2/3 of the issuance during this time period was focused in the 0-15 year maturity buckets. And when including corporate cusip taxable munis, the opportunity set expands across the curve for those looking to match the duration of their liabilities.

#### Low Correlations and Broad Diversification

Municipal bonds also provide significant risk management benefits. An allocation to municipal bonds may help manage fixed-income portfolio volatility because municipal bond returns generally have a low correlation to other fixed-income

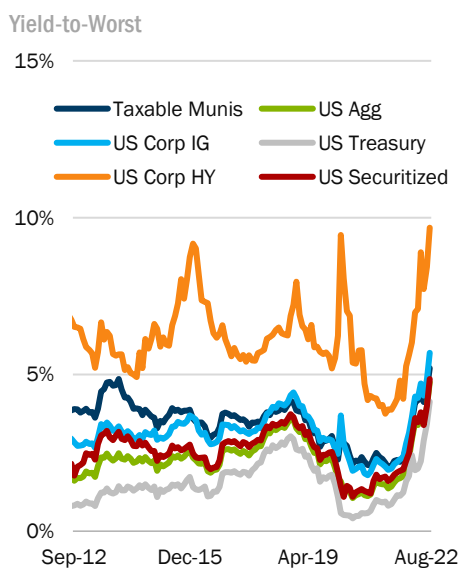
sectors (Figure 6). That's been true over decades for traditional tax-exempt municipals. It was also true for taxable municipals, although to a lesser extent.

The taxable municipal market has far fewer issuers than the tax-exempt market, but is well-diversified in purpose. They fund toll roads, bridges, light rail lines, airports, university and government buildings, water and sewer systems, fiber-optic telecom lines and electric supply and distribution systems. The issuers are also diversified by region, credit rating and security structure (e.g., callable vs non-callable bonds). As a comparison, the Bloomberg taxable municipal index (ticker: BTMNTX) has 13 distinct investable sub-sectors; in contrast, the Bloomberg US Corporate bond master (ticker: LUACTRUU) has only three.

#### High Quality Asset Class and Stable Historical Ratings

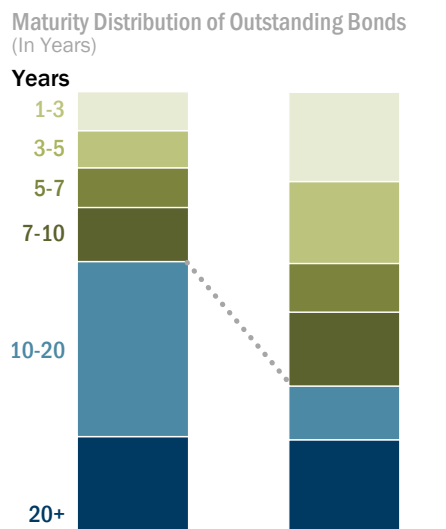
The relative high-quality nature of municipal bonds is also attractive for risk-conscious investors and insurers seeking to meet their capital requirements most efficiently. Approximately 60% of US municipal bonds outstanding are A rated or better; only a tiny portion are below investment-grade. In contrast, only about

**FIGURE 4: MUNICIPALS CAN PROVIDE ATTRACTIVE YIELDS**



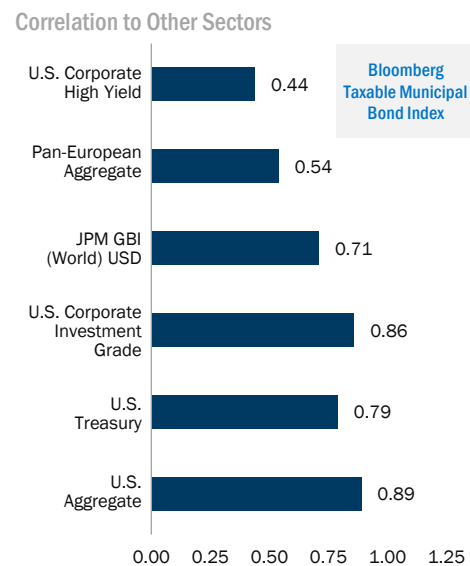
**It is not possible to invest directly into an index.**  
Source: Bloomberg, ICE Data. See Appendix for additional information, including index descriptions.

**FIGURE 5: MOST TAXABLE MUNICIPALS ARE INTERMEDIATE TO LONG BONDS**



As of October 31, 2022  
Source: Bloomberg, Bloomberg Municipal Index – Taxable Bonds, Bloomberg US Corporate Bond Index

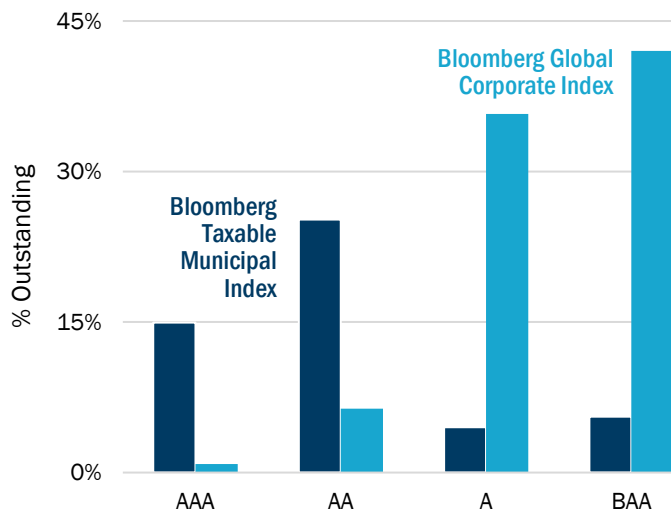
**FIGURE 6: TAXABLE MUNIS DIVERSIFY OTHER BOND SECTORS**



**It is not possible to invest directly into an index.**  
Source: Bloomberg and Credit Suisse.  
See Index Descriptions for additional information related to the listed indices.

**FIGURE 7: MOST TAXABLE MUNIS ARE HIGH QUALITY**

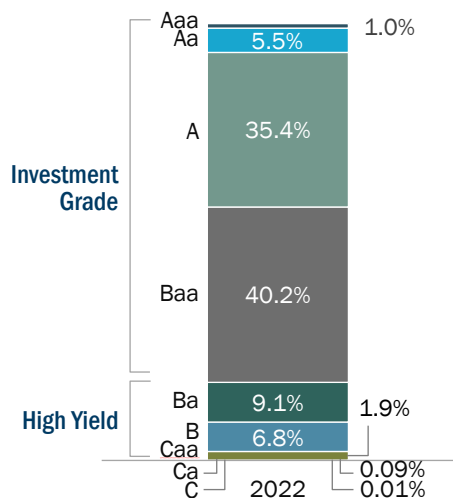
Ratings Distributions: Taxable Municipal vs. Global Corporate Bonds



Source: Bloomberg. Data as of October 31, 2022

**FIGURE 8: CORPORATE CREDIT MARKET HAS CHANGED**

Ratings Distribution | Bloomberg U.S. Corporate Aggregate and U.S. High Yield



Source: High Yield: Bloomberg U.S. High Yield Index; Investment Grade: Bloomberg U.S. Corporate Aggregate  
As of October 31, 2022

**It is not possible to invest directly into an index.** Please see Disclosures in the Appendix for additional information, including index descriptions. Due to rounding the sum of items may not equal 100%.

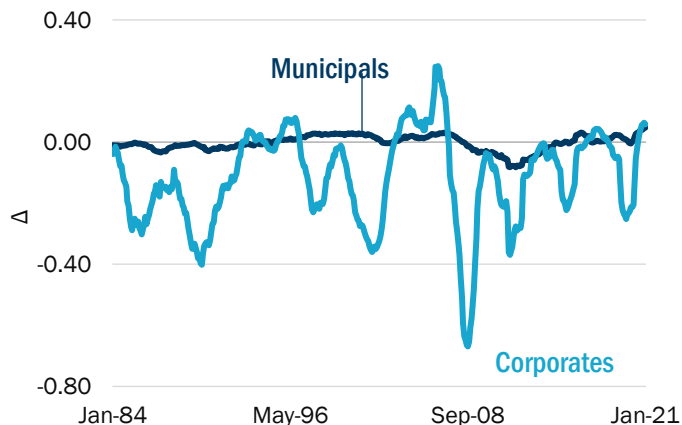
7% of the global corporate bond market is double-A rated, and approximately 40% is below-investment grade (Figure 7).

By the end of October 2022, the share of investment-grade corporates with a triple-B rating was 40%, up from 26% ten years earlier (Figure 8). We believe these bonds are vulnerable to being re-rated below-investment grade during the next economic downturn. Investors that can't own below-investment grade debt would be forced to liquidate their holdings at inopportune times, pushing prices down further.

Historically, municipal bond ratings have been far more stable than corporate bond ratings, as Figure 9 shows. Why should this be? Some corporations are vulnerable to event risks, such as leveraged buyouts, that rarely affect municipal bonds. More generally, corporations have fewer options to cover their debt in times of stress. Municipal bond issuers have more latitude.

State and local governments can raise taxes, if necessary, to support the general obligation bonds which are backed by the issuer's full faith and credit. Revenue bonds, on the other hand, are backed by dedicated cash flow streams from tolls or other user fees for essential services. In many cases, these public enterprises are virtual monopolies. An airport or water/sewer system, for example, can often raise prices without losing customers.

**FIGURE 9: MUNI RATINGS HAVE BEEN RELATIVELY STABLE MOODY'S RATING DRIFT 1984-2021 FOR U.S. MUNICIPALS AND GLOBAL CORPORATES**



As of January 1, 2021

Rating drift measures the net average number of notches a credit changes over the study period. It is defined as the average upgraded notches per issuer minus the average downgraded notches per issuer.

Source: Moody's US Municipal Bond Defaults and Recoveries, Moody's Trends in Global Corporates Rating Transitions



A look at historical default rates also demonstrates the resiliency of the municipal bond asset class. In fact, the average five-year municipal default rate since 2012 is 0.1%, up just slightly from the historical average of 0.08%, which dates back to 1970; meanwhile the average five-year global corporate default rate was 7.2% since 2012, up 40 basis points from its historical average of 6.8% since 1970. (Source: Moody's, US municipal bond defaults and recoveries, 1970-2021, data report, 21 April 2022.

### Infrastructure Issuance and Opportunities

We expect strong issuance of taxable municipal bonds in the future. After decades of neglect, US infrastructure earned a C- on The American Society of Civil Engineers (ASCE)'s 2021 Infrastructure Report Card. Bringing US infrastructure to a state of good repair would cost \$5.9 trillion, the ASCE estimates. Although the federal government and some states have stepped up infrastructure investments in recent years, only 55% of the funds needed have been committed. Another \$2.6 trillion in funding is needed over the next 10 years.

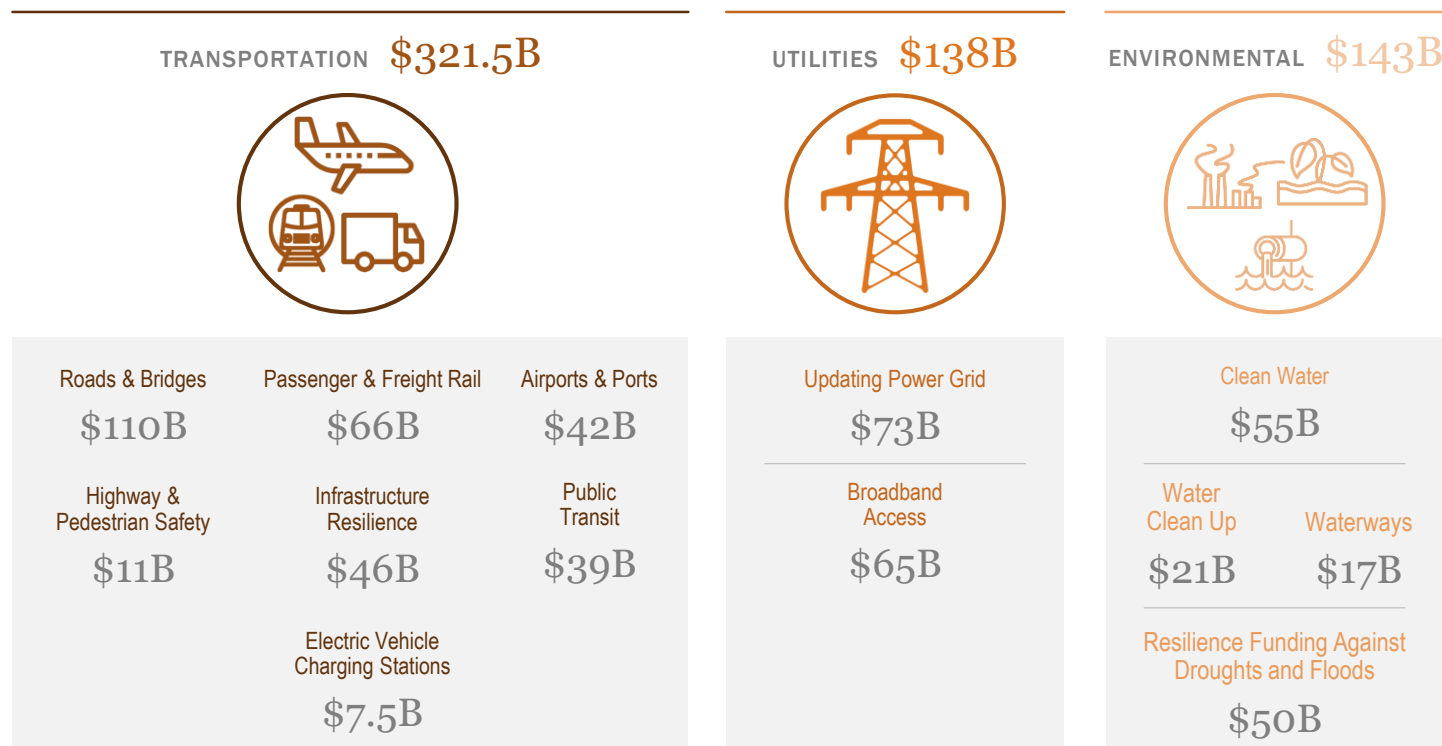
The 2021 passage of the \$1.2 trillion Infrastructure Investment and Jobs Act (IIJA) provides federal grant funding for much needed infrastructure programs. These funds are available for various projects through 2022 to 2026.

### Making a Strategic Allocation to US Municipal Bonds

In conclusion, the addition of taxable municipal bonds help improve the risk/return profile of a diversified fixed income portfolio. Lower correlations, incremental yield potential and the potential to generate alpha in a highly fragmented asset class all contribute positively to a portfolio's risk/return trade off. Over the last ten years, an allocation to taxable municipal bonds has improved the return per unit of risk on a portfolio of diversified U.S. bonds.

We believe taxable-bond yields remain competitive and credit quality remains high; there are good fundamental reasons that we believe will allow credit ratings to remain relatively stable, and correlations to other fixed income sectors to remain low.

FIGURE 10: ~\$550B OVER 5 YEARS IN NEW FEDERAL SPENDING INCLUDES



Note: Chart shows categories grouped into three sections, but many target more than one area of transportation, utilities, and the environment.

Source: American Society of Civil Engineers, Infrastructure Report Card 2021, March 2021 US Senate: Bipartisan Infrastructure Investment and Jobs Act Summary July 28, 2021.

## Disclosures

### ADDITIONAL INFORMATION FOR FIGURE 1

US Corp HY: ICE BoA US High Yield Index; Taxable Muni: ICE BoA Taxable Municipal Index; Muni HY: Bloomberg Municipal High Yield Index; Emerging Mkts Sovereign: ICE BoA Emerging Markets BBB & Lower Sovereign; Emerging Mkts Corp: ICE BoA Emerging Markets Corporate Plus Index; US Corp IG: Bloomberg US Corp. Investment Grade; Leveraged Loan: S&P/LSTA Leveraged Loan Index; Muni IG: Bloomberg Municipal Bond Index; US Agg: Bloomberg US Aggregate Bond Index; US Securitized: Bloomberg U.S. Securitized MBS/ABS/CMBS Index; US Treasury: Bloomberg US Treasury Index; Agg ex US: Bloomberg Global Aggregate ex USD Index.

### ADDITIONAL INFORMATION FOR FIGURE 3

ABS Index: Bloomberg U.S. Securitized MBS/ABS/CMBS Index  
MBS Index: Bloomberg U.S. Securitized MBS/ABS/CMBS Index  
Credit Index: Bloomberg U.S. Credit Index  
Agency Index: Bloomberg U.S. S Securitized MBS/ABS/CMBS Index  
Treasury Index: Bloomberg U.S. Treasury Index  
Municipal Index: Bloomberg Municipal Bond Index

### ADDITIONAL INFORMATION FOR FIGURE 4

US Treasury: ICE BofA US Treasury Index  
US Corp AA: ICE BofA AA US Corporate Index  
Taxable Muni: ICE BofA Broad US Taxable Municipal Securities Index  
Tax-Exempt Muni: ICE BofA US Municipal Securities Index

### ADDITIONAL INFORMATION FOR FIGURE 6

U.S. Corporate HY: Bloomberg U.S. High Yield Index  
Pan-European Aggregate: Bloomberg Pan-European Aggregate Index  
JPM GBI (World) USD: JPM GBI (World) USD Index  
U.S. Corporate Investment Grade: Bloomberg U.S. Corporate Investment Grade Index  
U.S. Treasury: Bloomberg U.S. Treasury Index  
U.S. Aggregate: Bloomberg U.S. Aggregate Index  
Taxable Municipal Investment Grade Index: Bloomberg U.S. Taxable Municipal Index

### ADDITIONAL INFORMATION FOR FIGURE 9

US Municipals:  
Global Corporates:

## SOURCE DISCLOSURES

ICE Data Indices, LLC ("ICE Data"), is used with permission. ICE® is a registered trademark of ICE Data or its affiliates and BofA® is a registered trademark of Bank of America Corporation licensed by Bank of America Corporation and its affiliates ("BofA") and may not be used without BofA's prior written approval. ICE data, its affiliates and their respective third party suppliers disclaim any and all warranties and representations, express and/or implied, including any warranties of merchantability or fitness for a particular purpose or use, including the indices, index data and any data included in, related to, or derived therefrom. Neither ICE data, its affiliates nor their respective third party suppliers shall be subject to any damages or liability with respect to the adequacy, accuracy, timeliness or completeness of the indices or the index data or any component thereof, and the indices and index data and all components thereof are provided on an "as is" basis and your use is at your own risk. ICE data, its affiliates and their respective third party suppliers do not sponsor, endorse, or recommend MacKay Shields LLC, or any of its products or services.

"Bloomberg®", "Bloomberg Indices®", Bloomberg Fixed Income Indices, Bloomberg Equity Indices and all other Bloomberg indices referenced herein are service marks of Bloomberg Finance L.P. and its affiliates, including Bloomberg Index Services Limited ("BISL"), the administrator of the indices (collectively, "Bloomberg") and have been licensed for use for certain purposes by MacKay Shields LLC ("MacKay Shields"). Bloomberg is not affiliated with MacKay Shields, and Bloomberg does not approve, endorse, review, or recommend MacKay Shields or any products, funds or services described herein. Bloomberg does not guarantee the timeliness, accurateness, or completeness of any data or information relating to MacKay Shields or any products, funds or services described herein.

## NOTE TO EUROPEAN INVESTORS

This document is intended for the use of professional and qualifying investors (as defined in the Alternative Investment Fund Manager's Directive) only. Where applicable, this document has been issued by MacKay Shields Europe Investment Management Limited, Hamilton House, 28 Fitzwilliam Place, Dublin 2 Ireland, which is authorized and regulated by the Central Bank of Ireland.

## IMPORTANT DISCLOSURE

Availability of this document and products and services provided by MacKay Shields LLC may be limited by applicable laws and regulations in certain jurisdictions and this document is provided only for persons to whom this document and the products and services of MacKay Shields LLC may otherwise lawfully be issued or made available. None of the products and services provided by MacKay Shields LLC are offered to any person in any jurisdiction where such offering would be contrary to local law or regulation. This document is provided for information purposes only. It does not constitute investment or tax advice and should not be construed as an offer to buy securities. The contents of this document have not been reviewed by any regulatory authority in any jurisdiction.

This material contains the opinions of certain professionals at MacKay Shields but not necessarily those of MacKay Shields LLC. The opinions expressed herein are subject to change without notice. This material is distributed for informational purposes only. Forecasts, estimates, and opinions contained herein should not be considered as investment advice or a recommendation of any particular security, strategy or investment product. Information contained herein has been obtained from sources believed to be reliable, but not guaranteed. Any forward-looking statements speak only as of the date they are made and MacKay Shields assumes no duty and does not undertake to update forward-looking statements. No part of this document may be reproduced in any form, or referred to in any other publication, without express written permission of MacKay Shields LLC. ©2022, MacKay Shields LLC. All Rights Reserved.

## Past performance is not indicative of future results.

The following indices may be referred to in this document:

### ICE BOFA U.S. HIGH YIELD INDEX

ICE BofA U.S. High Yield Index tracks the performance of U.S. dollar denominated below investment grade corporate debt publicly issued in the U.S. domestic market. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million. In addition, qualifying securities must have risk exposure to countries that are members of the FX-G10, Western Europe or territories of the U.S. and Western Europe. The FX-G10 includes all Euro members, the U.S., Japan, the U.K., Canada, Australia, New Zealand, Switzerland, Norway and Sweden. Original issue zero coupon bonds, 144a securities (both with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Callable perpetual securities are included provided they are at least one year from the first call date. Fixed-to floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Securities issued or marketed primarily to retail investors, equity-linked securities, securities in legal default, hybrid securitized corporates, eurodollar bonds (USD securities not issued in the U.S. domestic market), taxable and tax-exempt U.S. municipal securities and DRD-eligible securities are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

### ICE BOFA TAXABLE MUNICIPAL INDEX

ICE BofA U.S. Taxable Municipal Securities Index tracks the performance of U.S. dollar denominated investment grade taxable municipal securities publicly issued in the U.S. domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch). In addition, qualifying securities must have at least one-year remaining term to final maturity, at least 18 months to maturity at point of issuance, a fixed coupon schedule and a minimum amount outstanding of \$250 million. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Original issue zero coupon bonds and "global" securities (debt issued simultaneously in the eurobond and U.S. domestic markets) qualify for inclusion in the Index. Tax-exempt U.S. municipal, 144a and securities in legal default are excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

### BLOOMBERG MUNICIPAL HIGH YIELD INDEX

An unmanaged index of municipal bonds with the following characteristics: fixed coupon rate, credit rating of Ba1 or lower or non-rated using the middle rating of Moody's, S&P, and Fitch, outstanding par value of at least \$3 million, and issued as part of a transaction of at least \$20 million. In addition, the bonds must have a dated-date after December 31, 1990 and must be at least one year from their maturity date.

### ICE BOFA EMERGING MARKETS BBB & LOWER SOVEREIGN

ICE BofA BBB & Lower Sovereign USD External Debt Index tracks the performance of U.S. dollar denominated emerging market and cross-over sovereign debt publicly issued in the eurobond or U.S. domestic market. Qualifying countries must have a BBB1 or lower foreign currency long-term sovereign debt rating (based on an average of Moody's, S&P and Fitch). Countries that are not rated, or that are rated "D" or "SD" by one or several rating agencies qualify for inclusion in the index but individual non-performing securities are removed. Qualifying securities must have at least one year remaining term to final maturity, at least 18 months to maturity at point of issuance, a fixed or floating coupon and a minimum amount outstanding of \$250 million. Local currency debt is excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

### ICE BOFA EMERGING MARKETS CORPORATE PLUS INDEX

ICE BofA Emerging Markets Corporate Plus Index tracks the performance of U.S. dollar and euro denominated emerging markets non-sovereign debt publicly issued in the major domestic and eurobond markets. In order to qualify for inclusion in the Index an issuer must have risk exposure to countries other than



members of the FX G10, all Western European countries, and territories of the U.S. and Western European countries. The FX-G10 includes all Euro members, the U.S., Japan, the U.K., Canada, Australia, New Zealand, Switzerland, Norway and Sweden. Individual securities of qualifying issuers must be denominated in U.S. dollars or euro, must have at least one year remaining term to final maturity, at least 18 months to final maturity at point of issuance, and a fixed coupon. In addition, bonds of qualifying issuers must have at least 250 million (EUR or USD) in outstanding face value. The index includes corporate and quasigovernment debt of qualifying countries, but excludes sovereign and supranational debt. Original issue zero coupon bonds, "global" securities (debt issued simultaneously in the eurobond and U.S. domestic bond markets), 144a securities and pay-in-kind securities, including toggle notes, qualify for inclusion in the Index. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Central bank issued, equity-linked and legally defaulted securities are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

#### **BLOOMBERG U.S. CORPORATE INVESTMENT GRADE INDEX**

The Bloomberg U.S. Corporate Bond Index measures the investment grade, fixed-rate, taxable corporate bond market. It includes USD denominated securities publicly issued by U.S. and non-U.S. industrial, utility and financial issuers.

#### **S&P/LSTA LEVERAGED LOAN INDEX**

The S&P/LSTA Leveraged Loan Index (the Index) is a market value-weighted index designed to measure the performance of the U.S. leveraged loan market based upon market weightings, spreads and interest payments.

#### **BLOOMBERG MUNICIPAL BOND INDEX**

A rules-based, market-value-weighted index engineered for the long-term tax-exempt bond market. To be included in the index, bonds must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least \$7 million and be issued as part of a transaction of at least \$75 million. The bonds must be fixed rate, have a date-date after December 31, 1990, and must be at least one year from their maturity date. Remarketed issues, taxable municipal bonds, bonds with floating rates, and derivatives, are excluded from the benchmark. The index has four main sectors: general obligation bonds, revenue bonds, insured bonds (including all insured bonds with a Aaa/AAA rating), and prerefunded bonds. Most of the index has historical data to January 1980. In addition, sub-indices have been created based on maturity, state, sector, quality, and revenue source, with inception dates later than January 1980.

#### **BLOOMBERG U.S. AGGREGATE BOND INDEX**

The Bloomberg U.S. Aggregate Index represents securities that are SEC-registered, taxable, and dollar denominated. Must have at least one year to final maturity regardless of call features. Must have at least \$300 million par amount outstanding. Must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. Must be dollar-denominated and non-convertible.

#### **BLOOMBERG U.S. SECURITIZED MBS/ABS/CMBS INDEX**

The Bloomberg Securitized MBS/ABS/CMBS Index tracks agency mortgage backed pass-through securities (both fixed-rate and hybrid ARM) guaranteed by Ginnie Mae (GNMA), Fannie Mae (FNMA), and Freddie Mac (FHLMC); investment grade debt asset backed securities; and investment grade commercial mortgage backed securities. The index is constructed by grouping individual pools into aggregates or generics based on program, coupon, and vintage.

#### **BLOOMBERG U.S. TREASURY INDEX**

Public obligations of the U.S. Treasury with a remaining maturity of one year or more. Must be a U.S. Treasury security. Must have at least \$300 million par amount outstanding. Must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. Must be fixed rate. Must be dollar-denominated and non-convertible.

#### **BLOOMBERG GLOBAL AGGREGATE EX USD INDEX**

The Bloomberg Global Aggregate ex USD Index is a measure of global investment grade debt from 24 local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers. Bond issued in USD are excluded.

#### **ICE BOFA U.S. TREASURY INDEX**

ICE BofA U.S. Treasury Index tracks the performance of U.S. dollar denominated sovereign debt publicly issued by the U.S. government in its domestic market. Qualifying securities must have at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of \$1 billion. Qualifying securities must have at least 18 months to final maturity at the time of issuance. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

#### ICE BOFA AA U.S. CORPORATE INDEX

ICE BofA U.S. Corporate Index tracks the performance of U.S. dollar denominated investment grade corporate debt publicly issued in the U.S. domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million. Original issue zero coupon bonds, 144a securities (with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Callable perpetual securities are included provided they are at least one year from the first call date. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Equity-linked securities, securities in legal default, hybrid securitized corporates, euro dollar bonds (USD securities not issued in the U.S. domestic market), taxable and tax-exempt U.S. municipal securities and DRD-eligible securities are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

#### ICE BOFA BROAD U.S. TAXABLE MUNICIPAL SECURITIES INDEX

ICE BofA Broad U.S. Taxable Municipal Securities Index tracks the performance of U.S. dollar denominated debt publicly issued by U.S. states and territories, and their political subdivisions, in the U.S. domestic market. Qualifying securities must be subject to U.S. federal taxes and must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity to enter the index and one month remaining term to final maturity to remain in the index, a fixed coupon schedule (including zero coupon bonds) and an investment grade rating (based on an average of Moody's, S&P and Fitch). The call date on which a pre-refunded bond will be redeemed is used for purposes of determining qualification with respect to final maturity requirements. Minimum size requirements vary based on the initial term to final maturity at time of issuance. Securities with an initial term to final maturity greater than or equal to one year and less than five years must have a current amount outstanding of at least \$10 million. Securities with an initial term to final maturity greater than or equal to five years and less than ten years must have a current amount outstanding of at least \$15 million. Securities with an initial term to final maturity of ten years or more must have a current amount outstanding of at least \$25 million. "Direct pay" Build America Bonds (i.e., a direct federal subsidy is paid to the issuer) qualify for inclusion in the index, but "tax-credit" Build America Bonds (i.e., where the investor receives a tax credit on the interest payments) do not. Local bonds issued by U.S. territories within their jurisdictions that are tax exempt within the U.S. territory but not elsewhere are excluded from the Index. All 144a securities, both with and without registration rights, and securities in legal default are excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

#### ICE BOFA U.S. MUNICIPAL SECURITIES INDEX

ICE BofA U.S. Municipal Securities Index tracks the performance of U.S. dollar denominated investment grade tax exempt debt publicly issued by U.S. states and territories, and their political subdivisions, in the U.S. domestic market. Qualifying securities must have at least one year remaining term to final maturity, at least 18 months to final maturity at the time of issuance, a fixed coupon schedule and an investment grade rating (based on an average of Moody's, S&P and Fitch). Minimum size requirements vary based on the initial term to final maturity at time of issuance. Securities with an initial term to final maturity greater than or equal to one year and less than five years must have a current amount outstanding of at least \$10 million. Securities with an initial term to final maturity greater than or equal to five years and less than ten years must have a current amount outstanding of at least \$15 million. Securities with an initial term to final maturity of ten years or more must have a current amount outstanding of at least \$25 million. The call date on which a pre-refunded bond will be redeemed is used for purposes of determining qualification with respect to final maturity requirements. Original issue zero coupon bonds are included in the Index. Taxable municipal securities, 144a securities and securities in legal default are excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index.

#### BLOOMBERG U.S. HIGH YIELD INDEX

Covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures, 144-As and pay-in-kind bonds (PIKs, as of October 1, 2009) are also included.

#### BLOOMBERG PAN-EUROPEAN AGGREGATE INDEX

Covers eligible investment grade securities from the entire European continent. The primary component is the Bloomberg Euro-Aggregate Index. In addition, the Bloomberg Pan-European Aggregate Index includes eligible securities denominated in British pounds (GBP), Swedish krona (SEK), Danish krone (DKK), Norwegian krone (NOK), Czech koruna (CZK), Hungarian forint (HUF), Polish zloty (PLN), Slovenian Tolar (SIT), Slovakian koruna (SKK), and Swiss franc (CHF). Apart from the currency constraint, the inclusion rules for the Pan-European Index are identical to those of the Bloomberg Euro-Aggregate Index.

#### JPM GBI (WORLD) USD

The J.P. Morgan GBI series provides a comprehensive measure of local currency denominated fixed rate government debt consists of five core index products covering developed markets. The broadest series tracks 27 countries.

#### BLOOMBERG U.S. TAXABLE MUNICIPAL INDEX

The Bloomberg U.S. Taxable Municipal Bond Index is a rules-based, market-value-weighted index engineered for the long-term taxable bond market. To be included in the index, bonds must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies if all three rate the bond: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least \$7 million and be issued as part of a transaction of at

least \$75 million. The bonds must be fixed rate and must be at least one year from their maturity date. Remarketed issues (unless converted to fixed rate), bonds with floating rates, and derivatives, are excluded from the benchmark.

#### **BLOOMBERG US TREASURY: INTERMEDIATE INDEX**

The Bloomberg US Treasury: Intermediate Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury with maturities of 1 to 9.9999 years to maturity.

#### **BLOOMBERG U.S. CREDIT INDEX**

Publicly issued U.S. corporate and specified foreign debentures and secured notes. Must be an investment grade credit security. Must have at least one year to final maturity regardless of call features. Must have at least \$300 million par amount outstanding. Must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. Must be fixed rate. Must be dollar-denominated and non-convertible.

#### **BLOOMBERG U.S. CORPORATE HIGH YIELD INDEX**

The Bloomberg U.S. High Yield Index covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures, 144-As and pay-in-kind bonds (PIKs, as of October 1, 2009) are also included. Must have at least one year to final maturity regardless of call features. Must have at least \$150 million par amount outstanding. Must be rated high-yield (Ba1/BB+ or lower) by at least two of the following ratings agencies: Moody's, S&P, Fitch. Must be fixed rate, although it can carry a coupon that steps up or changes according to a predetermined schedule. Must be dollar-denominated and non-convertible. Must be publicly issued.

#### **BLOOMBERG U.S. TAXABLE MUNICIPAL INDEX**

The Bloomberg U.S. Taxable Municipal Bond Index is a rules-based, market-value-weighted index engineered for the long-term taxable bond market. To be included in the index, bonds must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies if all three rate the bond: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least \$7 million and be issued as part of a transaction of at least \$75 million. The bonds must be fixed rate and must be at least one year from their maturity date. Remarketed issues (unless converted to fixed rate), bonds with floating rates, and derivatives, are excluded from the benchmark.