Bond Market Update

July 2022

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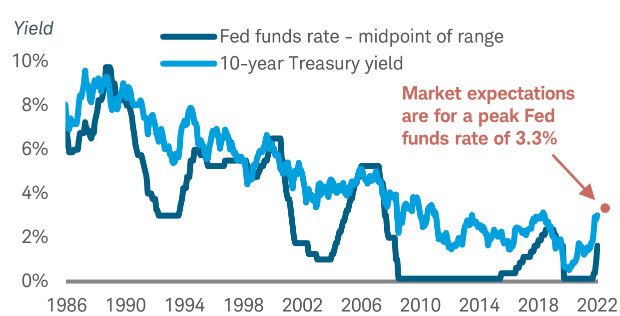
Municipal Bonds

Schwab Center for Financial Research perspective

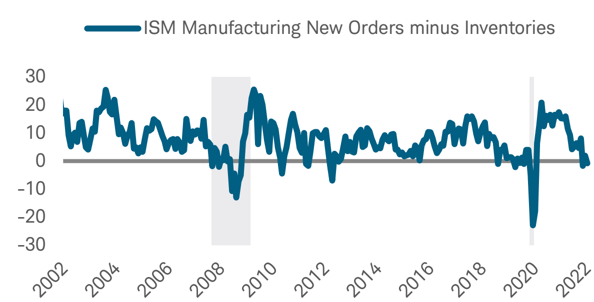
- **Treasury yields have limited upside** and may have already peaked. The 10-year Treasury yield tends to peak near the peak Fed funds rate of a given cycle. Market expectations point to a 3.3% terminal rate, which is consistent with the peak in 10-year yields year to date. However, softening growth and inflation expectations suggest the 10-year yield near 3% has limited upside, and may actually decline in the second half of the year.
- **Economic growth is slowing and inflation pressures appear to be easing.** The ISM Manufacturing Survey showed new orders lagging inventories, which historically has been followed by disappointing economic growth.
- **Money supply is down sharply,** in both real and nominal terms. With expansive fiscal policies in the rearview mirror, the growth in the money supply has returned to pre-Covid levels and recently turned negative in inflation-adjusted terms. Negative "real" money supply growth is another potential sign of recession.
- **Inflation expectations appear to be more well-anchored than many feared.** Much has been made of the rise of both survey-based and market-based inflation expectations. But with most measures near or below 3% over long time horizons, they seem well anchored compared to the current multi-decade high levels of inflation.

10-year Treasury yields likely have limited upside



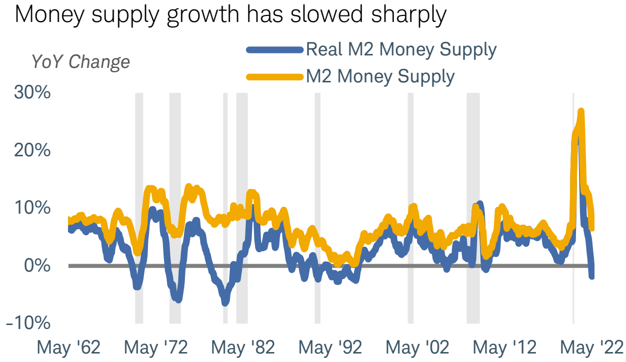
Source: Bloomberg, using monthly data as of June 30, 2022. Federal Funds Target Rate Mid Point of Range (FDTRMID Index) and US Generic Govt 10 Yr (USGG10YR Index). **Past performance is no guarantee of future results.**

When new orders drop below inventories, growth tends to slow



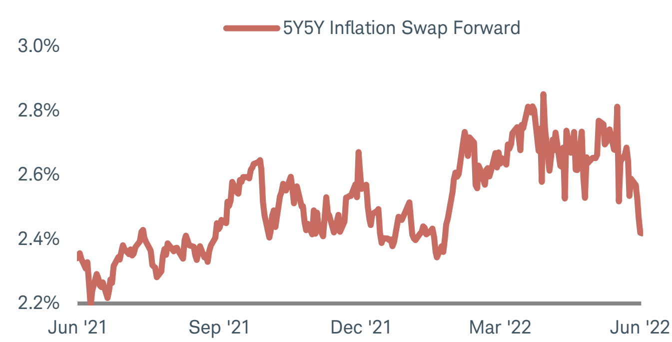
Source: Bloomberg, using monthly data as of May 2022. ISM Manufacturing Report on Business Inventories SA (NAPMINV Index) and ISM Manufacturing Report on Business New Orders SA (NAPMNEWO). Shading represents past recessions.

Money supply growth has slowed sharply



Note: Real M2 Money Stock Series deflates M2 money stock with CPI.
Source: Federal Reserve Bank of St. Louis. Real M2 Money Stock and M2, Percent Change from Year Ago, Monthly, Seasonally Adjusted Monthly data as of 5/31/2022. Shading represents past recessions. M2 definition included in the disclosures page.

5-year inflation expectations are still around 2.5%



Note: This is the 5-year, 5-year USD inflation swap rate. The rate is calculated using the following formula: USD: 2*USSWIT10 Curncy - USSWIT5 Curncy.
Source: Bloomberg. USD Inflation Swap Forward 5Y5Y (FWISUS55 Index). Daily data as of 6/30/2022.

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Corporate Bond Market Update

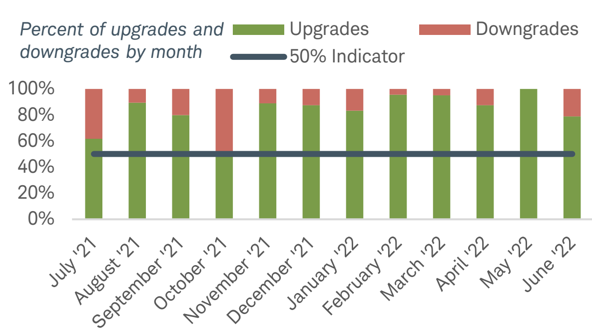
July 2022

Collin Martin, CFA
Director, Fixed Income Strategist
Taxable Asset Classes

Schwab Center for Financial Research perspective

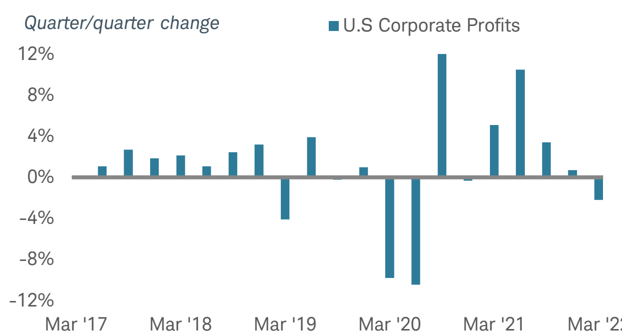
- **Investment-grade corporate bonds appear attractive.** Although corporate fundamentals are deteriorating, IG issuers should be better able to withstand slower growth and tighter financial conditions relative to high-yield bond issuers. Rating agencies continue to issue more upgrades than downgrades with IG issuers.
- **High-yield bonds are at risk as corporate profit growth slows.** Corporate profits declined in the first quarter of 2022, according to the Bureau of Economic Analysis. High-yield credit spreads have risen lately, but we expect them to rise further as slowing economic growth and tighter financial conditions weigh on the market.
- **Preferred securities appear attractive.** Prices are near their post-financial crisis lows, so the entry point looks attractive for long-term investors who can tolerate some volatility. Banks—the largest issuer of preferreds—still appear well-capitalized as the aggregate tier 1 capital ratio remains above the pre-pandemic levels.
- **Bank loans are at risk as well.** Like high-yield bonds, we're more cautious on bank loans. Their floating coupon rates may seem attractive for investors as short-term yields rise, but they also mean that issuers will see their interest expenses rise sharply in an already challenging corporate profit environment.

Investment-grade upgrades have significantly outpaced downgrades lately



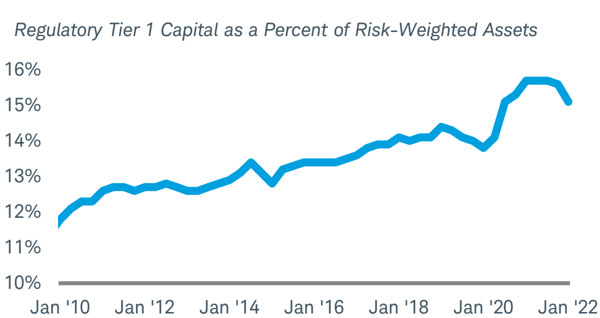
Source: Bloomberg, with data from Moody's. Monthly upgrade/downgrade actions of investment-grade rated companies from July 2021 through June 2022.

Corporate profits declined in the first quarter



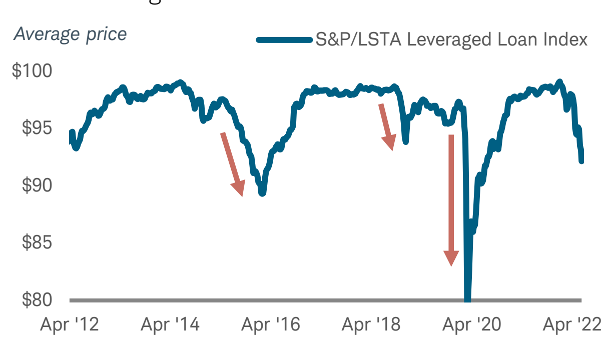
Source: Bloomberg, using quarterly data as of 1Q2022. US Corporate Profits With IVA and CCA Total SAAR (CPFTTOT Index). Note: Y-axis is truncated at 12%; actual increase for 3Q20 was 25%.

Banks are generally well capitalized and should be able to remain current on preferred coupon payments



Source: St. Louis Federal Reserve and the Board of Governors of the Federal Reserve System, using quarterly data as of 3/31/2022. Financial Soundness Indicator; Regulatory Tier 1 Capital as a Percent of Risk-Weighted Assets.

Despite their low interest rate risk, bank loan prices can still suffer large drawdowns



Source: Bloomberg, using weekly data as of 6/30/2022. S&P/LSTA Leveraged Loan Price Index (SPBDALB Index). **Past performance is no guarantee of future results.**

Municipal Bond Market Update

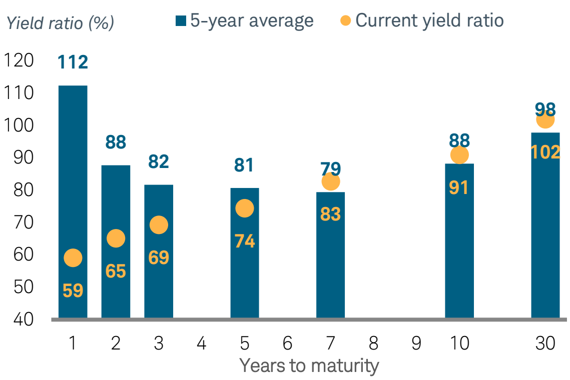
July 2022

Cooper Howard, CFA
Director, Fixed Income Strategist
Municipal Bonds

Schwab Center for Financial Research perspective

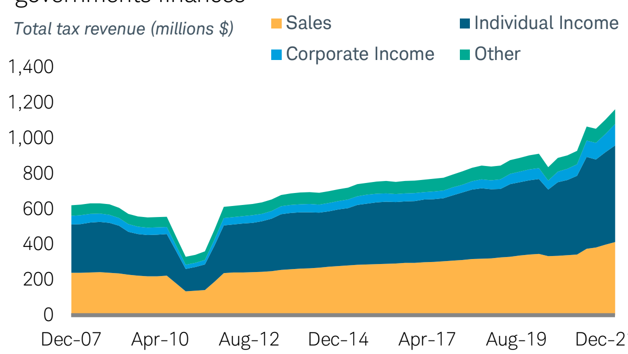
- **Munis are an area of opportunity**. It has been the worst start to a year in more than 40 years, but the sharp selloff has created potential opportunities that largely haven't existed for many years. Credit quality is generally strong due to the strong economic recovery, fiscal support, and surging tax revenues. Muni investors should consider taking advantage of the recent selloff by moving up in both credit quality and coupon structure, and moderately extending duration if they have been investing in very short-term bonds.
- **Longer-term munis are more attractive than short-term munis.** Yields relative to Treasuries are more attractive for longer-term munis compared to short-term munis. Rising interest rates should also pose less of a headwind to performance because we believe the bulk of the move up in yields this year is likely behind us.
- **Individuals are paring back their individual muni holdings.** Mutual funds and ETFs are starting to increase their share of muni ownership, signaling a slow shift towards more professional management.
- **We are cautious on high yield issuers despite favorable credit conditions.** The spread between high-yield and investment-grade munis has increased but is still low relative to history.

Relative yields for longer-term munis are more attractive than short-term munis



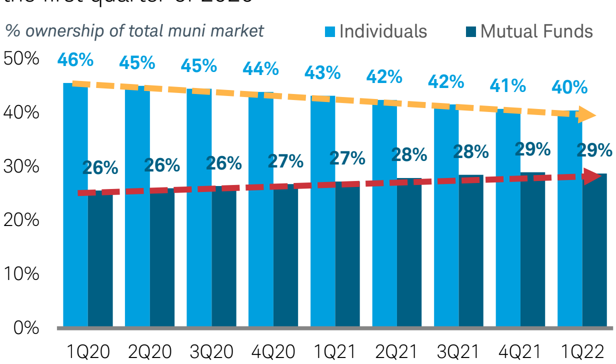
Source: Bloomberg. As of 6/30/22

Surging tax revenues have helped bolster state governments finances



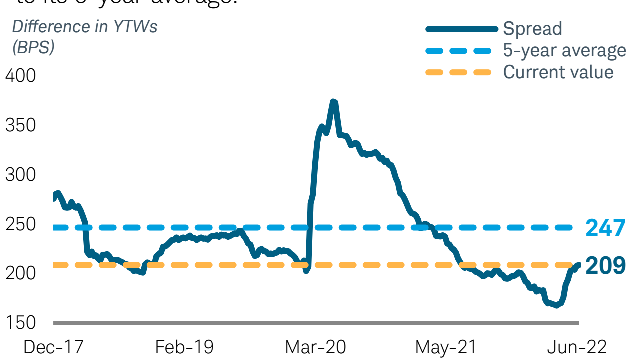
Source: U.S. Census, as of 3/31/22.

Ownership of individual bonds has steadily fallen since the first quarter of 2020



Source: SIFMA, as of 6/9/22

The additional yield for high yield munis is low compared to its 5-year average.



Source: Bloomberg Municipal and High Yield Municipal Bond Indices, as of 6/30/22. Difference in yields may be due to different index characteristics such as duration, coupon structures, or maturities.

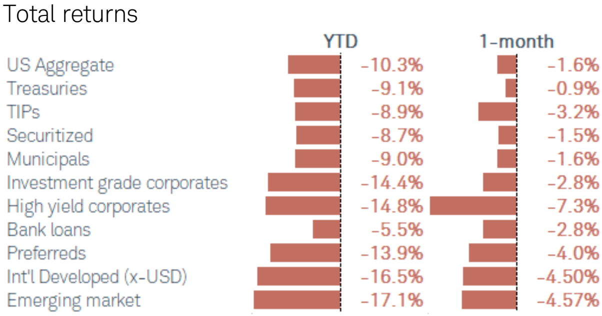
Fixed Income Market Snapshot

July 2022

Schwab Center for Financial Research strategy

- **Start to extend duration gradually.** The cyclical peak in the 10-year Treasury yield may be behind us. We favor adding duration to benchmark levels. The market has already discounted aggressive Fed tightening. While we expect more rate hikes, the pace may slower later in the year on weaker economic growth and ebbing inflation.
- **Credit:** Move up in credit quality as corporate fundamentals should continue to deteriorate through the end of the year. We prefer investment grade corporate bonds and preferred securities for those with a more aggressive risk tolerance. With financial conditions tightening and the yield curve flattening, we suggest a more cautious approach with high-yield bonds and bank loans.
- **Munis:** The 7- to 10–year portion of the curve offer the most attractive yields relative to their risks. Credit conditions are generally favorable, but we suggest focusing on higher rated issuers because the rise in spreads means investors no longer need to stretch for yield with low rated munis and the risk of a recession is growing.

Total returns



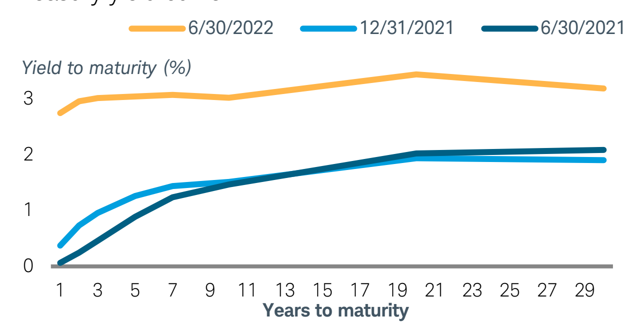
Source: Bloomberg. Returns from 12/31/2021 through 6/30/2022. Returns assume reinvestment of interest and capital gains. See disclosures for indexes used. **Past performance is no guarantee of future results.**

Key metrics

	Current	One-month ago
2-yr. Treasury yield (%)	2.96	2.56
5-yr. Treasury yield (%)	3.04	2.82
10-yr. Treasury yield (%)	3.02	2.85
30-yr. Treasury yield (%)	3.19	3.05
10-yr. TIPS Breakeven (%)	2.34	2.65
2/10 Spread (BPS)	5.1	28.4
Dollar Index	1,260.2	1,226.8
5-yr. MOB spread (%)	74.5	77.5
10-yr. MOB spread (%)	91.0	87.6
IG Corporate OAS (BPS)	155	130
HY Corporate OAS (BPS)	566	396

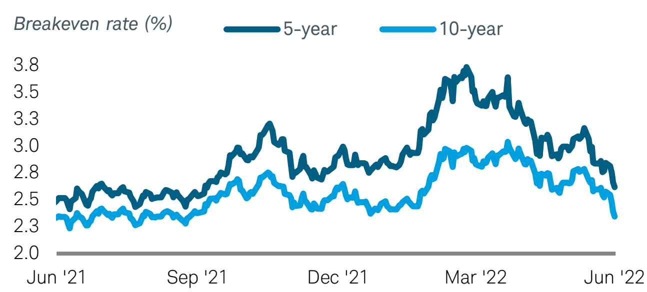
Source: Bloomberg, as of 6/30/2022. **Past performance is no guarantee of future results.**

Treasury yield curve



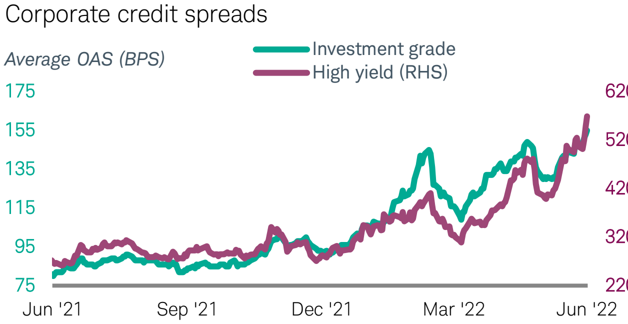
Source: Bloomberg, as of 6/30/2022. **Past performance is no guarantee of future results.**

TIPS breakeven rates



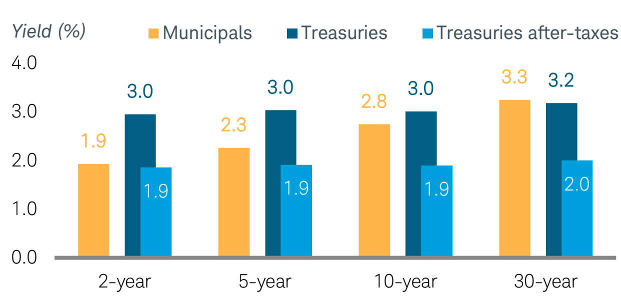
Source: Bloomberg, as of 6/30/2022. U.S. Breakeven 5 Year (USGGBE05 Index) US Breakeven 10 Year (USGGBE10 Index).

Corporate credit spreads



Source: Bloomberg, as of 6/30/2022. Bloomberg U.S. Corporate Bond Index (LUACTRUU) and Bloomberg U.S. Corporate High-Yield Bond Index (LF98TRUU Index). OAS is quoted as a fixed spread, or differential, over U.S. Treasury issues.

Municipal bond yields



Source: Bloomberg, as of 6/30/2022. Treasuries assume a 37% Federal tax rate. **Past performance is no guarantee of future results.**

Important Disclosures

All views and opinions in this update are as of June 30, 2022.

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Investing involves risk including loss of principal.

Fixed income securities are subject to increased loss of principal during periods of rising interest rates. Fixed-income investments are subject to various other risks including changes in credit quality, market valuations, liquidity, prepayments, early redemption, corporate events, tax ramifications and other factors.

High-yield bonds and lower rated securities are subject to greater credit risk, default risk, and liquidity risk.
Tax-exempt bonds are not necessarily suitable for all investors. Information related to a security's tax-exempt status (federal and in-state) is obtained from third parties, and Schwab does not guarantee its accuracy. Tax-exempt income may be subject to the alternative minimum tax. Capital appreciation from bond funds and discounted bonds may be subject to state or local taxes. Capital gains are not exempt from federal income tax.

Treasury Inflation Protected Securities (TIPS) are inflation-linked securities issued by the US Government whose principal value is adjusted periodically in accordance with the rise and fall in the inflation rate. Thus, the dividend amount payable is also impacted by variations in the inflation rate, as it is based upon the principal value of the bond. It may fluctuate up or down. Repayment at maturity is guaranteed by the US Government and may be adjusted for inflation to become the greater of the original face amount at issuance or that face amount plus an adjustment for inflation.

Bank loans are typically below investment-grade credit quality and may be subject to more credit risk, including the risk of nonpayment of principal or interest. Most bank loans are floating rate, with interest rates that are tied to LIBOR or another short-term reference rate, so substantial increases in interest rates may make it more difficult for issuers to service their debt and cause an increase in loan defaults. Bank loans are typically secured by collateral posted by the issuer, or guarantees of its affiliates, the value of which may decline and be insufficient to cover repayment of the loan. Many loans are relatively illiquid or are subject to restrictions on resales, have delayed settlement periods, and may be difficult to value. Bank loans are also subject to maturity extension risk and prepayment risk.

International investments involve additional risks, which include differences in financial accounting standards, currency fluctuations, geopolitical risk, foreign taxes and regulations, and the potential for illiquid markets. Investing in emerging markets may accentuate these risks.

Preferred securities are often callable, meaning the issuing company may redeem the security at a certain price after a certain date. Such call features may affect yield. Preferred securities generally have lower credit ratings and a lower claim to assets than the issuer's individual bonds. Like bonds, prices of preferred securities tend to move inversely with interest rates, so they are subject to increased loss of principal during periods of rising interest rates. Investment value will fluctuate, and preferred securities, when sold before maturity, may be worth more or less than original cost. Preferred securities are subject to various other risks including changes in interest rates and credit quality, default risks, market valuations, liquidity, prepayments, early redemption, deferral risk, corporate events, tax ramifications, and other factors.

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Diversification strategies do not ensure a profit and do not protect against losses in declining markets.

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Index Definitions

Indexes are unmanaged, do not incur management fees, costs and expenses, and cannot be invested in directly.

The **Bloomberg U.S. Aggregate Index** ("Core Bonds") represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. These major sectors are subdivided into more specific indices that are calculated and reported on a regular basis.

The **ICE BofA Fixed Rate Preferred Securities Index** ("Preferred Securities") tracks the performance of fixed-rate USD-denominated preferred securities issued in the U.S. domestic market.

The **Bloomberg U.S. Corporate Bond Index** ("IG Corporate Bonds") covers the U.S. dollar (USD)-denominated investment-grade, fixed-rate, taxable corporate bond market. Securities are included if rated investment-grade (Baa3/BBB-/BBB-) or higher using the middle rating of Moody's, S&P and Fitch ratings services. This index is part of the Bloomberg Barclays U.S. Aggregate Bond Index (Agg

The **Bloomberg U.S. Treasury Index** ("U.S. Treasury Bonds") includes public obligations of the U.S. Treasury excluding Treasury Bills and U.S. Treasury TIPS. The index rolls up to the U.S. Aggregate. Securities have $250 million minimum par amount outstanding and at least one year until final maturity.

The **Bloomberg U.S. Corporate High-Yield Bond Index** ("HY Corporate Bonds") covers the USD-denominated, non-investment grade, fixed-rate, taxable corporate bond market. Securities are classified as high-yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below.

The **Bloomberg U.S. Municipal Bond Index** ("Municipal Bonds") is a broad-based benchmark that measures the investment grade, U.S. dollar-denominated, fixed tax-exempt bond market. The index includes state and local general obligation, revenue, insured and pre-refunded bonds. The AAA, AA, A, Baa, 1 Year (1-2), 3 Year (2-4), 5 Year (4-6), 7 Year (6-8), 10 Year (8-12), 15 Year (12- 17), 20 Year (17-22), and Long Bond (22+) are all subindices.

The **Bloomberg Emerging Markets USD Aggregate Bond Index** ("EM USD Bonds") includes USD-denominated debt from emerging markets in the following regions: Americas, Europe, Middle East, Africa, and Asia.

The **Bloomberg US Mortgage-Backed Securities** Index measures the performance of mortgage pass-through securities guaranteed by the Government National Mortgage Association (Ginnie Mae),the Federal National Mortgage Association (Fannie Mae), and the Federal Home Loan Mortgage Corporation (Freddie Mac). It is constructed by grouping individual mortgage-backed security pools into aggregates or generics based on program, coupon, and vintage. It is a market-value weighted index.

The **Bloomberg Securitized Bond Index** ("Securitized") represents the securitized section of the Barclays US Aggregate.

The **Bloomberg U.S. Treasury Inflation Protected Securities (TIPS) Index** ("TIPS") is a market value-weighted index that tracks inflation-protected securities issued by the U.S. Treasury. To prevent the erosion of purchasing power, TIPS are indexed to the non-seasonally adjusted Consumer Price Index for All Urban Consumers, or the CPI-U (CPI).

The **Bloomberg Global Aggregate ex USD Bond Index** ("Int'l Developed Bonds (x-USD") provides a broad-based measure of the global investment-grade fixed-rate debt markets. The two major components of this index are the Pan-European Aggregate, and the Asian-Pacific Aggregate Indices.

Source: Bloomberg Index Services Limited. BLOOMBERG® is a trademark and service mark of Bloomberg Finance L.P. and its affiliates (collectively "Bloomberg"). BARCLAYS® is a trademark and service mark of Barclays Bank Plc (collectively with its affiliates, "Barclays"), used under license. Bloomberg or Bloomberg's licensors, including Barclays, own all proprietary rights in the Bloomberg Barclays Indices. Neither Bloomberg nor Barclays approves or endorses this material or guarantees the accuracy or completeness of any information herein, or makes any warranty, express or implied, as to the results to be obtained therefrom and, to the maximum extent allowed by law, neither shall have any liability or responsibility for injury or damages arising in connection therewith.

M2 is a measure of the money supply that includes cash, checking deposits, and easily-convertible near money. M2 is closely watched as an indicator of money supply and future inflation, and as a target of central bank monetary policy.