LPL RESEARCH

BOND MARKET PERSPECTIVES

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UNDERSTANDING BOND BENCHMARKS

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KEY TAKEAWAYS

The construction of widely followed stock indexes, like the S&P 500, are relatively easy for investors to understand, but bond indexes are not as intuitive.

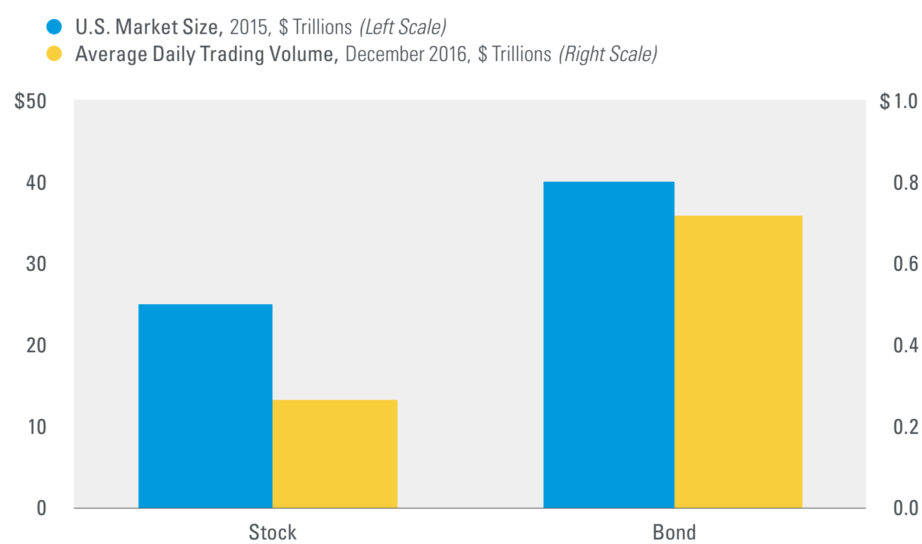
Bond indexes are generally rules based, include more securities than many equity indexes, and have characteristics such as average maturity and duration that can change over time.

If we were to ask investors on the street to name a stock index, we would likely hear responses like the "S&P 500" or "Dow" (Dow Jones Industrial Average [DJIA]). However, if we asked those same investors to name a bond index, they may have a more difficult time. And even if they knew the name of a bond index, asking them to explain how the index is constructed would likely be answered with blank stares.

Part of the reason for this is that stock indexes are generally viewed as more exciting, often seeing bigger daily moves and broader coverage from media. In reality, the U.S. bond market is close to twice the size of the stock market ($40 trillion versus $25 trillion for the stock market as of year-end 2015), and has average daily trading volumes almost three times higher [Figure 1].

However, the size and over-the-counter nature of the bond market also make it more complex. Stock indexes are relatively easy to understand. Even those with limited knowledge of financial markets are able to identify that the S&P 500

1 THE U.S. BOND MARKET IS LARGER AND HAS MORE DAILY TRADING VOLUME THAN THE U.S. STOCK MARKET



Source: LPL Research, SIFMA, World Bank 01/30/17

Market Size data is as of 2015 (latest available World Bank data).

Daily Trading Volumes as of December 2016.

The Bloomberg Barclays U.S. Aggregate Bond Index is a broad-based flagship benchmark that measures the investment-grade, U.S. dollar-denominated, fixed-rate taxable bond market.

is intended to track the performance of roughly 500 large company stocks. And since many companies also only have one publicly traded common stock, the ability to track a company with a ticker is made even easier. In the bond market, however, large companies could have hundreds of different bond issues, each with varying maturities, coupons, and sometimes even credit ratings. Though strides have been made in increasing bond market transparency, the sheer number of bond issues available (more than 1,000,000 compared to roughly 4,000–5,000 publicly traded common stocks), coupled with the lack of a centralized exchange, makes the market and index construction more difficult for investors to understand.

DECIDING WHAT SECURITIES ARE INCLUDED

The decision regarding which stocks are to be included in many major equity indexes, such as the S&P 500 or DJIA, are made by committees based on broad rules about what type of companies the index represents. Bond market index providers, on the other hand, usually don't select the securities in the index. Rather, they set rules around bond characteristics such as region, maturity (when a bond is paid off by the borrower), credit rating, taxability, liquidity (how often the bond trades), and issue size. Once these rules are set, any bonds meeting all of the criteria are included in the index. The widely used Bloomberg Barclays U.S. Aggregate Bond Index for example, included 10,158 different issues as of January 30, 2017.

Bond index providers also set rules around rebalance dates, which indicate how often index constituents change. On the day of the rebalance, any bonds no longer meeting the index criteria will be removed, and any new bonds that do meet the criteria will be added.

2 CHARACTERISTICS OF BOND INDEXES CAN CHANGE OVER TIME

Bloomberg Barclays U.S. Aggregate Index

Date	Number of Issues	Average Maturity (Years)	Duration	Average Coupon
1/29/2016	9,699	7.78	5.44	3.18%
1/30/2017	10,158	8.24	5.95	3.07%

Source: LPL Research, Barclays Live 01/30/17

THE CHANGING NATURE OF A BOND INDEX

The selection and rebalance rules are set in advance and may be relatively easy to understand; however, movement of bonds into and out of an index can change the makeup of the index over time. For example, assume a simple bond index that holds three securities that mature in one, three, and five years (an average maturity of three years). One year later, the first bond matures, and another bond with a five-year maturity is added to the index. In this example, the average maturity of our index moves from three years to 3.7 years, even though the rules of the index haven't changed.

This may sound like a negative, but it's important to remember that the bond market changes over time. Given that bond indexes are rules based and include every bond that meets the index criteria, the changing characteristics of the index are also likely to represent the changing characteristics of the broader bond market.

This example is extreme and most major bond indexes won't change this much overnight. Figure 2 shows how several key indicators of the widely followed Bloomberg Barclays U.S. Aggregate Bond Index have changed over the past year.

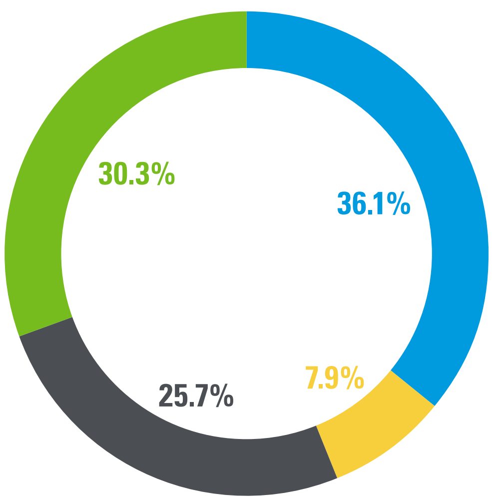
SECTOR PLAYS

Most investors understand that stock market indexes include weightings to specific sectors of the market (e.g., energy, consumer discretionary). This is also the case in bond indexes, though sectors often relate to the type of bond rather than an industry or sector play. Figure 3 shows the sector makeup of the Bloomberg Barclays U.S. Aggregate Index. This index tracks the U.S. taxable bond market, and therefore includes many different types of bonds including government bonds, corporate bonds, and mortgage-backed securities (MBS). Investors need to understand the sector weightings of the bond indexes they are benchmarking their own portfolios against to ensure they are getting an "apples to apples" comparison.

3 THE BLOOMBERG BARCLAYS U.S. AGGREGATE INDEX INCLUDES SEVERAL BOND SECTORS

Bloomberg Barclays U.S. Aggregate Index

- U.S. Treasuries
- Government Related, Including Government Agencies
- Corporate
- Securitized, Including MBS, FNMA, GNMA, etc.



Source: LPL Research, Barclays Live 01/30/17

MBS – Mortgage-Backed Securities

FNMA – Federal National Mortgage Association (Fannie Mae)

GNMA – Government National Mortgage Association (Ginnie Mae)

CONCLUSION

Equity market indexes typically track a relatively small number of stocks selected by a committee, but bond index providers don't select individual securities for their indexes. Instead, they set rules about what type of bonds should be included, and all bonds that meet those criteria are included in performance calculations. This leads to a much larger number of holdings, and also means index characteristics, such as maturity, coupon, and duration (interest rate risk) change over time, keeping the index in line with changes in the broader market.

The bond market is larger and more complex than the stock market, a fact that is reflected in index construction methodologies for the different asset classes. Though stock indexes are more intuitive than their bond market counterparts, bond index construction methodology is actually not as complex as many believe, and investors can benefit from understanding how the benchmark that they measure performance against is constructed.

IMPORTANT DISCLOSURES

The opinions voiced in this material are for general information only and are not intended to provide specific advice or recommendations for any individual. To determine which investment(s) may be appropriate for you, consult your financial advisor prior to investing. All performance reference is historical and is no guarantee of future results. All indexes are unmanaged and cannot be invested into directly.

The economic forecasts set forth in the presentation may not develop as predicted and there can be no guarantee that strategies promoted will be successful.

Bonds are subject to market and interest rate risk if sold prior to maturity. Bond values and yields will decline as interest rates rise, and bonds are subject to availability and change in price.

Preferred stock investing involves risk, which may include loss of principal, and are subject to many of the same risks which affect fixed income securities.

Government bonds and Treasury bills are guaranteed by the U.S. government as to the timely payment of principal and interest and, if held to maturity, offer a fixed rate of return and fixed principal value. However, the value of fund shares is not guaranteed and will fluctuate.

Corporate bonds are considered higher risk than government bonds but normally offer a higher yield and are subject to market, interest rate, and credit risk as well as additional risks based on the quality of issuer coupon rate, price, yield, maturity, and redemption features.

Mortgage-backed securities are subject to credit, default, prepayment risk that acts much like call risk when you get your principal back sooner than the stated maturity, extension risk, the opposite of prepayment risk, market and interest rate risk.

INDEX DEFINITIONS

The S&P 500 Index is a capitalization-weighted index of 500 stocks designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.

The Dow Jones Industrial Average Index is comprised of U.S.-listed stocks of companies that produce other (non-transportation and non-utility) goods and services. The Dow Jones industrial averages are maintained by editors of The Wall Street Journal. While the stock selection process is somewhat subjective, a stock typically is added only if the company has an excellent reputation, demonstrates sustained growth, is of interest to a large number of investors, and accurately represents the market sectors covered by the average. The Dow Jones averages are unique in that they are price weighted; therefore, their component weightings are affected only by changes in the stocks' prices.

The Bloomberg Barclays U.S. Aggregate Bond Index is a broad-based flagship benchmark that measures the investment-grade, U.S. dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM pass-throughs), ABS, and CMBS (agency and non-agency).

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