

## Bond Basics

March 2008

### Bond Basics: Selecting a Fixed Income Benchmark

Selecting a portfolio benchmark is one of the most important decisions an investor makes. The benchmark provides a starting point for the portfolio manager to construct a portfolio and directs how that portfolio should be managed on an ongoing basis from the perspectives of both risk and return.

In today's fixed income market, the number of benchmarks is virtually endless, and selecting the right one is not always easy. To try to ease the selection process, we examine what a benchmark is, why it is important to choose the right one, and the factors to consider when trying to find the best benchmark for your portfolio.

#### What is a Benchmark?

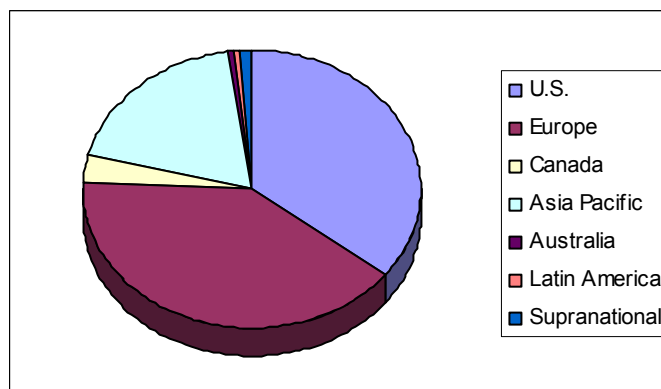
In most cases, investors choose a market "index," or combination of indices, as their portfolio benchmark. An index tracks the performance of a broad asset class, such as the investment-grade bond market, or a narrower slice of the market, such as investment-grade corporate bonds. Because indices track returns on a buy-and-hold basis and make no attempt to determine which securities are the most attractive, they represent a "passive" investment approach and can provide a good benchmark against which to compare the performance of a portfolio that is actively managed. Using an index, it is possible to see how much value an active manager adds and from where, or through what investments, that value comes.

In fixed income, the most commonly used indices are those created by large broker-dealers such as Lehman Brothers, J.P. Morgan, Merrill Lynch and Citigroup, and financial publishing companies, such as the Financial Times (FT). These firms have created dozens of indices, providing a benchmark for virtually any bond market exposure an investor might want (Lehman Brothers, for example, publishes more than 30 different indices).

Firms create indices by tracking the returns of a representative sample of securities in the asset class that the index is meant to track. For example, the Lehman Brothers Global Aggregate Bond Index is designed to track the global investment-grade bond market, which includes different types of bonds from around the world. The Global Aggregate index includes securities from each of the regions below in the same proportion that they exist in the market.

#### Composition of the Lehman Global Aggregate Bond Index

December 31, 2007



Source: Lehman Brothers

## Bond Basics

March 2008

The major index publishers use specific, predetermined criteria, such as size and credit rating, to determine which securities are included in a particular index. Index methodologies, returns and other statistics are usually available through the index publisher's website or through services such as Bloomberg or Reuters.

New indices are often created as investor interest grows in different types of fixed income portfolios. For example, as investor demand for emerging market debt grew, J.P. Morgan created its Emerging Markets Bond Index in 1992 to provide a benchmark for emerging market portfolios.

### The Importance of Selecting the Correct Benchmark

With a vast number of indices to choose from, deciding which one, or which combination of indices, to use as a benchmark can be difficult, but this decision is critically important for three reasons.

First, portfolio risk and return will be heavily influenced by the benchmark. When portfolio managers construct a portfolio, they typically take the securities in the benchmark as a starting point from which to take active positions in an effort to add value.

Second, the investor's choice of benchmark indicates not only the kinds of securities that should be included in the portfolio, but also the types of securities that should *not* be in the portfolio. For example, choosing a government bond index as the benchmark for your portfolio sends the portfolio manager a strong signal that the portfolio should not include a large percentage of securities with a high degree of risk. As another example, choosing an investment grade bond index that does not include mortgage-backed securities will signal that the investor does not want a large concentration of mortgage-backed securities in the portfolio.

Third, some benchmarks are better suited to specific investment goals than others. For an investor whose primary goal is capital preservation, an important criterion might be the credit quality of the benchmark. If the portfolio is intended to offset liabilities that change with interest rates, the most important consideration when selecting a benchmark might be the benchmark's interest rate sensitivity (or duration), rather than its prospective returns. In many cases of liability driven investment (LDI), the best approach may be a custom, or bespoke, index that mirrors the risk factors of the investor's liabilities, such as duration, instead of simply matching the cash flows.

The table below shows the characteristics, including credit quality and duration, of four well-known euro bond market benchmarks.

## Bond Basics

March 2008

	Citigroup Euro Broad Investment Grade	Lehman Euro Aggregate	Lehman Euro Gov't	Barclays Euro Inflation- Linked
Market Value (€ bn)	5,168	5,614	3,171	241
# Issues	1,913	2,754	261	28
Yield (%)	4.48	4.60	4.34	2.09
Maturity (years)	7.45	7.33	8.59	10.00
Duration (years)	5.43	5.30	5.92	8.34
Average Credit Quality	AA+	AA1/AA2	AA1/AA2	NA
% AAA	60.60	58.01	63.18	63.10
% AA	13.27	27.54	31.59	NA
% A	22.56	10.83	5.23	31.9
% BBB	3.57	3.62	---	---
% < BBB	---	---	---	---
% Government bonds	64.18	56.49	100	94.11
% Agency	7.76	12.46	---	---
% Collateralised/ Pfandbriefe	15.22	15.38	---	---
% Corporate (and other)	12.84	15.67	---	5.89
5-Year Volatility Average (annualized in %, 06/2001-06/2006)	2.63	2.58	3.11	3.91

Data as of December 31, 2007

Sources: Barclays, Citigroup, Lehman Brothers, PIMCO

As the table shows, the broad Lehman Euro Aggregate and Citigroup Euro Broad Investment Grade indices invest in a greater number and a greater variety of bonds than the government indices. Due to their greater diversification, the broader indices may offer higher yields and lower volatility, or risk, than the narrower government and inflation-linked indices, as the table indicates.

Selecting the right benchmark can be particularly important for investors looking to invest in international bonds. Because foreign currency exposure can affect the value and the volatility of a portfolio, global bonds can serve two distinctly different purposes, depending on whether the foreign currency exposure is hedged or unhedged. A global investor who wants to take a position on currency by investing in foreign bonds would use an unhedged index—one that is exposed to changes in currency values. For example, an investor who believes that the U.S. dollar will weaken may choose to invest in bonds denominated in other currencies because they will increase in value if the dollar falls. Currencies are far more volatile than bonds so when investing in unhedged foreign bonds, major changes in valuation stem more from currency volatility than bond price movements. However, because investors usually look to bonds for capital preservation or to meet liabilities, most opt for indices that hedge currency risk and avoid the volatility that currency investing can bring.

### The Main Considerations in Benchmark Selection

Given the importance of selecting the right benchmark, here are some key questions to answer before making a choice.

#### What are your overall performance goals and what is your tolerance for volatility, or risk?

An index with a track record of high longer-term returns may also exhibit a high volatility of

## Bond Basics

March 2008

monthly or quarterly returns and a higher chance of a negative absolute return over shorter time periods. However, an investor has the potential to be compensated for accepting the greater return volatility with higher absolute returns over longer time periods.

**What is your need for liquidity?** A portfolio constructed for necessary operating cash and requiring very high liquidity might use a very short-term benchmark. More risky benchmarks would contain less liquid issues and exhibit greater interest rate sensitivity.

**What type of liabilities do you aim to meet with your investments?** Investors implementing a liability-driven investment approach should consider not only the pattern of cash flows associated with their liabilities but also the risk factors that can cause changes in liabilities. For LDI investors, a custom benchmark comprised, for example, of an appropriate combination of government bonds, index-linked bonds, swaps and corporate bonds that closely matches the risk factors of the liabilities will likely provide a better fit than existing indices, while also providing flexibility to adapt to changes in the liability stream over time.

**Do you have liabilities that are linked to inflation?** Rising levels of inflation can erode the real, or inflation-adjusted, returns on an investment. An investor with inflation-linked liabilities might therefore choose the Barclays Euro Inflation-Linked index. This index is made up of inflation-linked bonds whose principal and interest payments rise in relation to the level of inflation.

**How many different types of securities do you want your portfolio manager to be able to invest in?** A benchmark should be a “good fit” for your portfolio and your asset manager in terms of the range of securities in which it can invest. A broad investment universe can potentially help increase return and reduce volatility. If the benchmark is “too narrow,” however, it may be difficult for the asset manager to make noticeable contributions to the portfolio’s overall performance through active management.

### What Makes a Good Benchmark?

Selecting a specific benchmark is an individual decision, but there are some minimum standards that any benchmark under consideration should meet. To be effective, a benchmark should meet most, if not all, of the following criteria:

**Unambiguous and Transparent**—The names and weights of securities comprising a benchmark should be clearly defined.

**Investable**—The benchmark should contain securities that an investor can purchase in the market or easily replicate.

**Priced daily**—The benchmark’s return should be calculated regularly.

**Availability of historical data**—Past returns of the benchmark should be available in order to gauge historical returns.

**Low turnover**—There should not be high turnover in the securities in the index because it can be difficult to base portfolio allocation on an index whose makeup is constantly changing.

**Specified in advance**—The benchmark should be constructed prior to the start of evaluation.

**Published risk characteristics**—The benchmark provider should regularly publish detailed risk metrics of the benchmark so that the investment manager can compare the actively managed portfolio risks to the passive benchmark risks.

### Conclusion

Choosing the right benchmark for a fixed income portfolio is important because the benchmark establishes some of the key risk and return parameters for managing the portfolio. There are

## Bond Basics

March 2008

many benchmarks to choose from in the fixed income market, and making a choice depends on many factors that are individual to each investor. Choosing the right benchmark depends on identifying those that meet certain minimum requirements and then selecting the index that best matches the investor's goals for the portfolio and the level of risk the investor is willing to assume in order to meet those goals.

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