



INVESTMENT UPDATE

For this month's *Investment Update*, we examine the changes that have occurred over the past few years in the high-grade US bond market, and how they have impacted investors.

The Bloomberg Barclays Aggregate Index is a good proxy for what's included in the US dollar-denominated high-grade bond market. The Aggregate Index has been around since the mid-1970s, and (as shown in the chart) includes US Treasury notes and bonds, US agency debentures, credits (corporate credits as well as dollar-denominated sovereign, supranational and foreign government issues), and securitized bonds (mostly US agency mortgage-backed securities [MBS], as well as certain commercial MBS and asset-backed bonds).

Like the S&P 500 for stock managers, the Aggregate Index is the primary benchmark for institutional bond investors. But just as the S&P 500 doesn't include every stock in the US, the Aggregate Index excludes municipal bonds, junk/non-investment-grade bonds, floating rate notes, private placements, non-agency residential MBS, Treasury STRIPS and TIPS, and any bonds with current maturities shorter than one year. It is, in essence, a benchmark for total return non-taxable institutions that invest in a "core bond" style. In addition, it's the umbrella index under which other widely-used indexes from Bloomberg Barclays reside.

The changing composition of this index—and by extension, the US bond market—is what we're most interested in. As is obvious in the chart, there has been uneven growth in the bond market over the past couple of decades, but that growth turned strongly positive after the financial crisis ended in 2009. While the Treasury market is the biggest component of the US bond market, it was not always that way. A close look shows that in the late 1990s to early 2000s, the Treasury market was shrinking. You might recall that during this period, which covered the dot-com, pre-9/11 era, the US economy was booming and federal tax revenues exceeded outlays for the first time in decades.

Federal budget surpluses in the "New Economy" era meant that the US Treasury had excess funds, and with those funds, the Treasury in 2000 began a program of buying back bonds from investors, and eliminating certain maturities of bonds from its

new issue auctions. Over the next three years, the Treasury purchased \$67 billion of bonds back from investors. At the time, we and other bond managers were worried that if the trend continued and the Treasury market continued to shrink significantly, that Treasury securities could lose their traditional role as benchmarks for the global bond market. That's all a distant memory now, as the costs of fighting wars and resuscitating a post-financial crisis economy meant that those budget surpluses quickly turned into budget deficits. Instead of shrinking the federal debt, we started piling it on, and that has

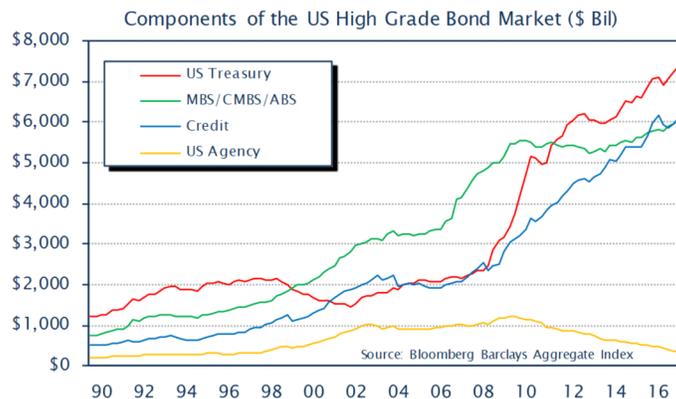
meant a massive increase in new issuance of Treasury securities. After hitting a low of barely 20% in early 2002, Treasuries now represent 37% of the Aggregate Index.

The chart also shows the rapid growth of the mortgage- and asset-backed securities (MBS/ABS) sector from 2000 to 2008 (with a brief slowdown in 2004-05). But once the housing market collapsed

in 2008, MBS issuance dried up, and the sector remained flat for more than five years. Today, the MBS/ABS component of the bond market is 30%, down from a 45% share in 2008. The lone sector of the market that has shrunk in dollar terms over the past decade is US agency debentures. Most of the growth in this sector in the 2000's was used to bulk up the mortgage agencies (FNMA and FHLMC, in particular) as they expanded their product lines during the housing boom. Since the crisis, they have less need to issue debt to fund operations, and most of the debt they do issue today is in issues so small that they're not included in the Aggregate Index.

Which leaves credit, a sector that has experienced almost as much growth as the Treasury market over the past few years. Corporations didn't significantly grow their debt levels in the years leading up to the financial crisis, as corporate debt stayed roughly flat between 2002 and 2007. But once the US economy resumed growing in 2009, corporate bond issuance picked up, with the market value of the credit component of the index having nearly tripled over the past decade.

Besides the change in the dollar value and weights in the bond market, the market has changed in other interesting ways. One of these is the varying duration of the mortgage compo-



ment. The issue here is that the effective maturity of a typical MBS is dependent on the homeowner's incentive to refinance; when interest rates drop, homeowners can reduce their monthly payments by paying off their old mortgage and signing up for a new one with a lower interest rate. Since most home mortgage loans are securitized into MBS, when these old mortgage loans are paid off ("prepaid" in bond-speak), the mortgage bond holder gets an early return of his principal. In sum, when interest rates—and especially mortgage rates—drop, the effective maturity and the duration of MBS shorten.

When interest rates fell in the late 1990s/early 2000s, homeowners took the opportunity to refinance, which had the immediate effect of dramatically shortening the effective maturity—and duration—of the mortgage market. In 2000–2003 as MBS yields dropped from mid-7% to less than 5%, the duration of the average mortgage security shortened to one year. But here's the rub: All of the new MBS going into the Index were backed with low rates, and the old higher rate mortgages exited the index since they had just been paid off. In 2000, the average MBS was backed by mortgage rates averaging 8%; today, the mortgage market has been re-cast, with an average home mortgage rate of less than 4%. Since most homeowners are significantly "out of the money" when it comes to being able to refinance at a lower rate, prepayments are at ground zero, and unless we have a surprising drop in mortgage rates, MBS durations are destined to remain elevated. Even if interest rates remain relatively stable, we expect that MBS durations will stay in the range of 5– to 6–years. So while it's been tough to get a handle on MBS durations over the past couple of decades, we should expect most mortgage securities to maintain relatively stable, but longer, durations going forward.

OK, that's enough mortgage talk for the next couple of years! If you are still with us, we'd like to leave you with one last thought showing how the modern bond market has been changing over the past few years, and that concerns credit quality. There is a cyclical component to credit quality, as it's tied to the strength of the broader economy. When economic growth is strong, companies' profitability and cash flows increase and their ability to cover all their current and future debt expenses strengthens; likewise, when sales and revenues slump during recessions, those same measures of debt coverage decline. But there is an additional, longer-term trend that's taken place over the past few decades that has led to broad-based decline in corporate credit quality.

In the chart on this page, we show the steady decline over two decades in the bond ratings of pharmaceutical issuers, an industry that's the poster child for declining credit quality over recent years. While there are industry-specific factors that have impacted pharma (the expiration of patents, excess free cash flow, etc.), there is a more universal reason why companies have chosen to allow their ratings to decline: There is little cost to do so, while the benefits can be significant.

The main penalty that comes with a lower credit rating is a higher cost of capital; when a lower-rated company issues new debt, or renegotiates existing debt with its lenders, it's forced to pay a higher rate of interest. But these incrementally higher borrowing costs have shrunk over recent years, as bondholders have been willing to accept a lower level of interest compensation for the lower credit quality. This is a trend that began in earnest with the expansion of the junk bond market in the 1980s, as credit analytics became more sophisticated, adopting and reconfiguring the tools and techniques of equity analysis.

Better credit analysis has provided superior information to investors, allowing them to take "smarter" risks and avoiding big credit blow-ups. The much-criticized Sarbanes-Oxley Act also improved disclosure of financial information after the corporate malfeasance episodes of 2001–02.

At the same time, many corporate bond issuers

have enjoyed greater financial flexibility by being willing to accept a lower rating. Lower ratings are a by-product of increased debt, or leverage, on a company's balance sheet; at the margin, adding debt instead of equity in the financial structure makes a company a little riskier by adding fixed (principal and interest) costs that must be repaid on schedule. A little debt is not a bad thing, particularly for companies whose businesses are stable and growing; for those companies, the additional funds generated by issuing debt can be used to fund research, modernize plant and equipment, or expand into new markets. For companies rated "BBB" and above (or "Baa" in Moody's parlance), the risks of higher leverage and higher interest costs are typically more than offset by these benefits (junk bond ratings, however, are another story). While not as dramatic a fall as the pharma industry, the average corporate bond in the Aggregate Index has fallen since the 1980s from low-AA to low-A.

The dynamics of a changing market add another layer of complexity to our risk management process. Fortunately, we have the analytic tools to keep on top of these changes in our market, and the experience to use them to our advantage.

