

Credit

# Does duration matter?

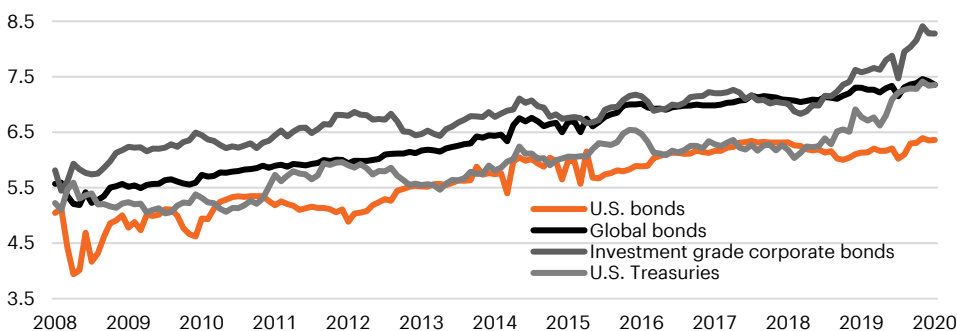
The declining rate environment of the past few decades has brought duration squarely back into focus, as this measure has extended to record levels for many bond indexes. While duration risk is certainly elevated for core fixed income allocations, like U.S. Treasuries and investment grade corporate bonds, we view the situation as much less dire for many sub-investment grade and even select investment grade credit investors. In this note we examine the impact of record-high durations across the fixed income universe and offer mitigation options for investors concerned with heightened interest rate sensitivity.

## Duration, defined

Duration, simply, is a measure of a bond price’s sensitivity to changes in interest rates. Given the inverse relationship between bond yields and prices, a bond with a longer duration should theoretically experience a larger price decline when rates fall than a bond with shorter duration, all else equal. If rates fall, longer-duration bond prices rise more than the prices of bonds with shorter durations. To illustrate, consider a bond with a duration of 6.0. With a 1% rise in interest rates, the bond’s price will fall roughly 6%. With a 1% decline in rates, the bond’s price will rise roughly 6%.

As it relates to the calculation of a bond’s duration, one of the other considerations is that duration rises as yields fall. The consequence of this is that the 40-year global decline in rates has steadily extended core fixed income duration, which is now at record levels for many bond indexes. We saw especially sharp increases in duration this year following the collapse in rates, meaning that even a slight uptick in rates could send bond prices sharply lower.

**Duration has extended across the core fixed income universe**



Source: Bloomberg Barclays U.S. Aggregate Bond Index, Bloomberg Barclays Global Aggregate Bond Index, ICE BofAML U.S. Corporate Index, ICE BofAML U.S. Treasury Index, July 31, 2008–September 30, 2020.

### Key takeaways

- As yields have fallen, duration has risen for many fixed income indexes.
- Core fixed income indexes are now much more interest-rate sensitive than ever before.
- Empirical duration measures for sub-investment grade credit find that these asset classes are less exposed to duration risk and, in fact, perform well during rising rate environments.

Beyond providing income, bond yields serve to cushion fixed income instruments from duration-driven price changes. The low-rate, long-duration environment has left little room for error, as evidenced by the yield per unit of duration. This statistic essentially shows the rise in interest rates that a portfolio can sustain before the yield cushion is gone and can be considered a gauge of compensation for interest rate risk. As shown below, yield per unit of duration is at a record low, meaning investors have never been compensated less for bearing interest rate risk.

**Yield per unit of duration**



Source: Bloomberg Barclays U.S. Aggregate Bond Index, July 31, 2000–September 30, 2020. Represents the ratio of the Barclays Agg’s yield-to-worst to its modified duration.

**The downside of duration**

Historical returns show just how detrimental rising interest rates can be to a core fixed income portfolio. The chart below lists the dates of six rising rate environments over the past three decades and the accompanying returns for the Barclays Agg. Unsurprisingly, in all but one case rising rates negatively impacted core fixed income. It’s important to remember that while these negative returns look generally small, these rising rate environments occurred amid a longer-term trend of falling rates.

Dates	Barclays Agg return
Sept. 1993–Dec. 1994	-2.3%
Dec. 1995–March 1997	3.1%
June 2005–June 2006	-0.8%
Sept. 2010–March 2011	-0.9%
June 2016–Dec. 2016	-2.5%
Aug. 2017–Nov. 2018	-1.3%

Source: Bloomberg Barclays U.S. Aggregate Bond Index.

<sup>1</sup> R-squared measures the fraction of variation in dependent variable that is predicted by independent variable.

In addition, with U.S. government rates today near all-time lows, the cushion from interest income to offset price declines is also near all-time lows.

**Duration outside the core**

Longer duration is not a phenomenon unique to investment grade bonds. The duration of the ICE BofAML High Yield Bond Index has also extended recently to 3.71, though it remains below its record level of 4.60 witnessed in 2013.

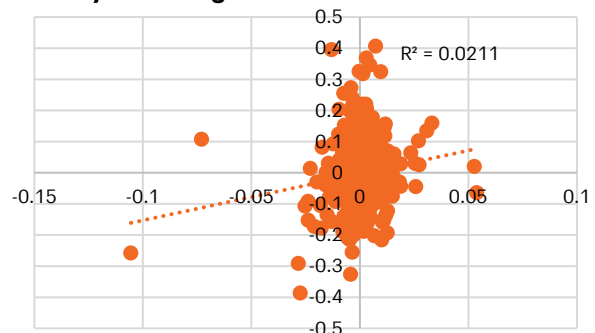
However, even with a longer duration profile, credit performance has historically been uncorrelated to interest rate changes. Below we show the same chart as above, but with returns for high yield bonds and senior secured loans. If duration were an accurate measure of a high yield bond’s sensitivity to rates, we’d expect returns roughly in line, at least directionally, with those seen in core fixed income. That is clearly not the case.

Dates	HY bond return	Loan return
Sept. 1993–Dec. 1994	2.4%	13.9%
Dec. 1995–March 1997	12.3%	10.1%
June 2005–June 2006	4.7%	6.7%
Sept. 2010–March 2011	7.1%	6.0%
June 2016–Dec. 2016	7.5%	5.4%
Aug. 2017–Nov. 2018	1.0%	3.4%

Source: ICE BofAML U.S. High Yield Bond Index, S&P/LSTA Leveraged Loan Index.

Further, regressing monthly changes in high yield bond prices with monthly changes in the 5-year U.S. Treasury shows no statistical relationship between the two. The R-squared<sup>1</sup> of this regression is 0.02, meaning that only 2% of the change in bond prices is explained by changes in interest rates.

**High yield performance uncorrelated to Treasury rate changes**



Source: ICE BofAML U.S. High Yield Index, 5-year U.S. Treasury. Plot of monthly Treasury rate changes vs. monthly HY bond index changes.

### Why does duration matter less for sub-investment grade credit?

Both company-specific fundamentals and macroeconomic conditions have more impact than the trajectory of interest rates on sub-investment grade credit prices. Generally, periods of prolonged rising interest rates accompany periods of stable-to-increasing economic growth with increasing corporate earnings and improving credit fundamentals. Because issuers are better able to meet their financial obligations during these periods, they also tend to coincide with falling default rates. The resulting decrease in risk premium (i.e., spread) typically offsets any moderate price effects of the rate increases, and high yield bonds perform well despite rising rates.

Plus, as rates have fallen, the percentage of credit spreads made up of Treasury yields has also fallen, meaning changes in these risk-free rates have much less impact on overall high yield spreads. Said another way, spreads now have more cushion to absorb changes in Treasury rates.

### Enter empirical duration

There is a way to prove, mathematically, that sub-investment grade and alternative credit strategies are less impacted by changes in rates. Empirical duration is a measure that uses historical data to calculate the observed change in a bond’s price given changes in rates. Calculating this number shows that the empirical duration of the high yield index is roughly -1.5, meaning that for every 100 basis points interest rates increase, bond prices can actually be expected to *increase* 1.5%.<sup>2</sup>

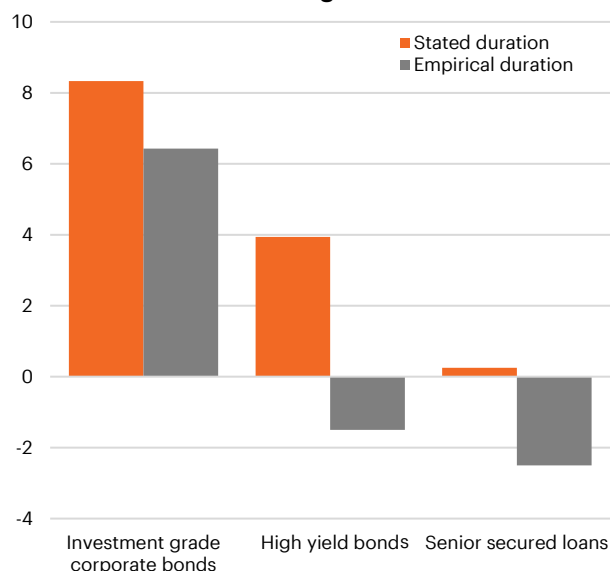
This measure is also useful for investors when applied to an asset class like senior secured loans. Loans typically have a very short duration due to their floating interest rates, which typically reset every 1–3 months. But when utilizing a statistic like empirical duration, we find that the result is -2.5. We find it unsurprising that this number is slightly more negative for loans than for high yield. Loans tend to exhibit similar tendencies to high yield—like performing well during times of market and economic strength—with the added benefit of supportive technicals during rising rate environments further boosting prices. (Investors often invest in floating rate instruments when they

anticipate an increase in rates.) Like the analysis for high yield bonds, empirical duration may be a more useful statistic for investors when assessing the impact of an allocation to senior secured loans or other floating rate asset classes, like collateralized debt obligations (CDOs).

Effective or modified duration measures consider only changes in interest rates in their calculation and do not consider other factors (e.g., credit statistics, supply and demand) that may impact a bond’s price; essentially, they consider every bond a risk-free asset. Empirical duration overcomes this shortcoming of traditional duration measures by capturing all actual price changes—effectively incorporating effects from changes in interest rates and any other factors, such as credit quality, that may impact bond prices. For this reason, we view this measure as much more relevant when assessing duration of these sub-investment grade or alternative credit strategies.

Given this, unsurprisingly, empirical and stated durations for investment grade products have historically tracked one another. These bonds are less exposed to credit risk, so changes in interest rates are the dominant driver of changes in bond prices. For sub-investment grade and alternative credit products, these numbers diverge significantly.

**Empirical duration is a more accurate measure for sub-investment grade**



Source: ICE BofAML U.S. Corporate Bond Index, ICE BofAML U.S. High Yield Bond Index, S&P/LSTA Leveraged Loan Index.

<sup>2</sup> Empirical duration calculated regressing weekly change in high yield bond index prices and weekly change in 5-year U.S. Treasury yields. Regression

coefficient represents the average change in a dependent variable given one unit change in an independent variable.

We believe core fixed income no longer meets many of its stated goals, as we wrote in our recent research note, **the traditional “40” is broken**. Bonds are bereft of income with yields at or near historic lows, and duration risk has become entirely asymmetrical. Rates have little room left to fall, meaning bond prices have little room left to rise. But even a slight uptick in rates could send core bond prices down sharply. Those looking to reduce or diversify their duration risk may look to areas of the market like high yield bonds or senior secured loans, which have historically been less—or not at all—sensitive to changes in interest rates.

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As Managing Director of Investment Research, Robert leads the team that analyzes the fundamentals behind market movements, macroeconomic trends and the performance of specific industries—as well as their potential impact on investors. His nearly two-decade tenure in the financial services industry includes experience as a loan portfolio manager and senior credit analyst focused on corporate loan issues. Robert serves as the firm’s primary subject matter expert on the corporate credit markets and select alternative investment solutions, developing targeted communications and educational resources

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Unless otherwise stated, all references equities refer to the S&P 500, and references to the Barclays Agg refer to the Bloomberg Barclays U.S. Aggregate Bond Index.

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