UNDERSTANDING DURATION

Duration is a measure of investment risk that takes into account both a bond's interest payments and its value at maturity. In general, long-term investments tend to be riskier than short-term ones. Assuming the same credit quality, long-term investments come with more time for interest rates to change or a myriad of real-world events to occur. But just how much riskier are securities with longer versus shorter maturities? Duration provides a standardized way to measure and compare risk between bonds.

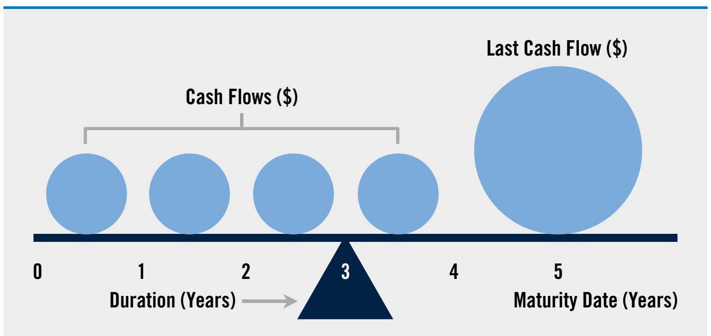
HOW DURATION WORKS

Duration weights all cash flows associated with a fixed income security to provide a measure of how interest payments made prior to maturity reduce risk.

Notice that the duration is shorter than the bond's maturity. This is because investors do not have to wait 10 years to get their money back—they get some back earlier in the form of a coupon payment, effectively reducing their risk.

That idea—that interest payments received prior to maturity reduce risk—is what duration is all about. In this simplified example, interest payments made annually give a five-year bond a duration of three years.

DURATION WEIGHTS ALL CASH FLOWS ASSOCIATED WITH A BOND



While the basic concept of duration is pretty simple, the math used to actually calculate it is not. However, if you are not a bond analyst or professional investor, you really do not need to know this. Suffice it to say that the standard formula used today is called modified duration, and that it is based on a formula devised by actuary Frederic Macaulay in 1938.

APPLYING DURATION TO INVESTMENT DECISIONS

What does matter is knowing that a bond's modified duration roughly matches the percentage change in price that would occur if rates changed by 100 basis points (1%). The price of a bond with a duration of 1.5 years would go up by approximately 1.5% if interest rates were to fall 100 basis points, or down by approximately 1.5% if interest rates were to rise by the same amount.

For a portfolio manager considering different bonds, duration provides a precise way to compare the degree of risk for each. If he or she is managing a portfolio with a low risk tolerance, shorter duration bonds may be most appropriate. They will fluctuate less, whichever way rates go. For a portfolio with a higher risk tolerance, longer durations, with greater upside potential, may be a better choice.

Managers measure duration of portfolios by adding up and weighting durations for the individual securities in them. This provides an accurate way to keep track of overall portfolio risk and ensure that the manager adheres to client guidelines. As appropriate, managers can also adjust portfolio durations to match a benchmark (such as a bond index) or to factor in their own assessments of the future direction of interest rates.

CONCLUSION

Duration provides a more accurate way to compare interest rate sensitivity and assess risk for different fixed income securities. It is one of the basic measures used to analyze and manage both individual securities and entire portfolios.

HELPING INVESTORS PARTICIPATE IN GLOBAL MARKET OPPORTUNITIES

At PGIM Investments, we consider it a great privilege and responsibility to help investors participate in opportunities across global markets while meeting their toughest investment challenges. We're part of PGIM, the global investment management business of Prudential Financial, Inc.—a top-10 investment manager globally with more than $1 trillion in assets under management (AUM).[1] This scale and investment experience allow us to deliver PGIM Funds—actively managed investment solutions designed to meet the needs of investors around the globe.

[1] Prudential Financial is the 10th largest investment manager (out of 562) in terms of global AUM based on the *Pensions & Investments* Top Money Managers list published 5/28/2018. This ranking represents assets managed by Prudential Financial as of 12/31/2017.

PGIM INVESTMENTS

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