

# How Much a **Bond** Can Gain or Lose in Value

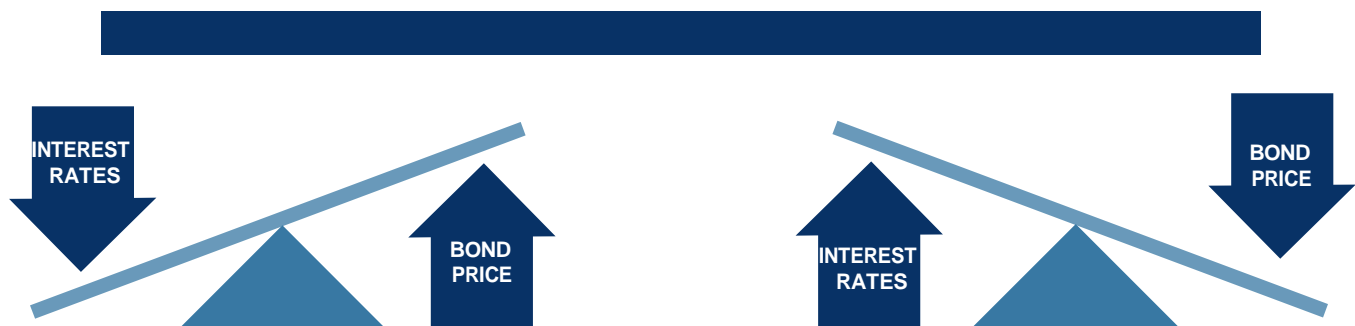
Bonds carry two risks that can affect their value.

The first is **credit risk**, which is the risk that the bond issuer may default.

The second risk is **interest rate risk**. This is what it means when you hear investment professionals discuss “**duration risk**,” what they are referring to is *interest rate risk* and this type of risk will be the topic of this report.

In short, duration risk is the risk that changes in interest rates will either increase or decrease the market value of a fixed-income investment.

Generally, there is an inverse relationship between the direction of interest rates and the value (price) of a bond. Therefore, if you own a bond when interest rates decline, the value of your bond should increase in value. Similarly, if you own a bond when interest rates are rising, the value of your bond should decrease.



In practice, there is a way to predict how much the price of a bond will increase or decrease based on movements in interest rates.

To do this, all it requires is to ask your Financial Advisor to give you the “duration” of your bond or your bond mutual fund.

**The reason that *duration* is so important is that it measures the sensitivity of your bond’s price to changes in interest rates.**

As mentioned above, duration measures the change in the value of your bond (how much it will increase or decrease in value) that will result from a 1% change in interest rates. The larger the duration number, the greater the interest rate risk or reward you have relative to the value of your bond.

Keep in mind that duration is expressed in years.

For example, if your Financial Advisor tells you that your bond has a duration of nine years, it suggests that the value of your bond’s price may decrease in value by 9% if interest rates rise 1%, and vice versa

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(increase in value by 9% if interest rates fall 1%).

Let's examine a hypothetical example of how this may work in the chart below.

Hypothetical Loss on Bonds <sup>2</sup>					
		Years to Maturity			
If Rates Increase By:		3 Years	5 Years	10 Years	20 Years
Interest Rate Increase	+1.0%	-3%	-5%	-9%	-14%
	+2.0%	-6%	-9%	-16%	-26%
	+3.0%	-8%	-13%	-23%	-35%
	+4.0%	-11%	-17%	-30%	-43%

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As you can see, a bond with **maturity** (maturity is the date you should be repaid your principal at par – i.e. face value) of 10 years has a duration of 9 years. That means for a 1% move in interest rates, the bond will increase or decrease in value by 9%. Or, said differently, \$100,000 invested in the 10-year bond would now be worth \$91,000.

**It's important to note that the longer the duration is, the more sensitive the bond will be to changes in interest rates.**

So, to further this example, let us consider what would happen if interest rates increased by an additional 1% on that same bond. That would reflect a total of a 2% rate increase on the 10-year bond. The bond worth \$91,000 after the first 1% increase in rates should lose *another* \$7,000 when rates increase by another 1%.

As a result, the total value of the original \$100,000 invested in the 10-year bond would now be \$84,000, which reflects the -16% duration that you see in the chart above. Please note that as yield increases, the duration on this bond generally declines, reducing the magnitude of the loss on the bond from additional increases in interest rates. This is why the 10-year bond loses only 16% as opposed to 18% with a 2% increase in interest rates.

The math on a 2% increase in interest rates would be as follows: \$100,000 (original investment) minus the product of (\$100,000 x 16%) original investment multiplied by 16%, which is the duration on a 10-year bond at a 2% increase in interest rates.

**$\$100,000 - (\$100,000 \times 16\%) = \$84,000.$**

**Keep in mind that if you hold the bond to maturity, you will receive the face value of the bond, which is the original price of the bond when it was issued and could be different from the price you paid for the bond.**

Thus, duration risk only really matters to those wanting to sell the bond before it matures.

You can find duration on individual bonds or any investment that uses bond-like mutual funds, ETFs, or unit investment trusts.

**So, the next time you are considering investing in a bond or a bond-related investment, be sure to ask for the duration of the investment to better understand the interest rate risk you are facing.**

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