# How do I use the MDURATION function in Excel?

Authored by

**stats writer**

June 30, 2024

The MDURATION function in Excel is a financial formula that calculates the modified duration of a bond or other fixed income security. It is used to determine the sensitivity of the bond's price to changes in interest rates. To use the MDURATION function, you must first have the bond's annual coupon rate, maturity date, settlement date, yield, and frequency of payments. Once these values are entered into the formula, it will return the modified duration in years. This information can be helpful in making investment decisions and managing risk in bond portfolios. To use the MDURATION function in Excel, simply input the required values into the designated cells and the result will be automatically calculated. It is a useful tool for financial analysis and planning.

This article describes the formula syntax and usage of the **MDURATION** function in Microsoft Excel.

## Description

Returns the modified Macauley duration for a security with an assumed par value of $100.

## Syntax

MDURATION(settlement, maturity, coupon, yld, frequency, )

**Important:** Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if dates are entered as text.

The MDURATION function syntax has the following arguments:

**Settlement** Required. The security's settlement date. The security settlement date is the date after the issue date when the security is traded to the buyer.

**Maturity** Required. The security's maturity date. The maturity date is the date when the security expires.

**Coupon** Required. The security's annual coupon rate.

**Yld** Required. The security's annual yield.

**Frequency** Required. The number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.

**Basis** Optional. The type of day count basis to use.

| Basis | Day count basis |
|---|---|
| 0 or omitted | US (NASD) 30/360 |
| 1 | Actual/actual |
| 2 | Actual/360 |
| 3 | Actual/365 |
| 4 | European 30/360 |

## Remarks

Microsoft Excel stores dates as sequential serial numbers so they can be used in calculations. By default, January 1, 1900 is serial number 1, and January 1, 2008 is serial number 39448 because it is 39,448 days after January 1, 1900.

The settlement date is the date a buyer purchases a coupon, such as a bond. The maturity date is the date when a coupon expires. For example, suppose a 30-year bond is issued on January 1, 2008, and is purchased by a buyer six months later. The issue date would be January 1, 2008, the settlement date would be July 1, 2008, and the maturity date is January 1, 2038, which is 30 years after the January 1, 2008, issue date.

Settlement, maturity, frequency, and basis are truncated to integers.

If settlement or maturity is not a valid date, MDURATION returns the #VALUE! error value.

If yld < 0 or if coupon < 0, MDURATION returns the #NUM! error value.

If frequency is any number other than 1, 2, or 4, MDURATION returns the #NUM! error value.

If basis < 0 or if basis > 4, MDURATION returns the #NUM! error value.

If settlement ≥ maturity, MDURATION returns the #NUM! error value.

Modified duration is defined as follows:

$$\text{MDURATION} = \frac{\text{DURATION}}{1 + \left(\frac{\text{Market yield}}{\text{Coupon payments per year}}\right)}$$