How do I calculate the duration of a function in Excel?

Authored by

stats writer

June 29, 2024

To calculate the duration of a function in Excel, you can use the built-in function called "DURATION". This function takes into account the start date, end date, and the annual interest rate to determine the time period of a financial investment. By inputting the necessary data, the function will provide the duration in terms of years, months, or days. This feature is useful for analyzing the performance of investments and making informed financial decisions. It is a simple and efficient tool for determining the time frame of a function in Excel.

The **DURATION** function, one of the Financial functions, returns the Macauley duration for an assumed par value of $100. Duration is defined as the weighted average of the present value of cash flows, and is used as a measure of a bond price's response to changes in yield.

Syntax

DURATION(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(2018,5,23) for the 23rd day of May, 2018. Problems can occur if dates are entered as text.

The **DURATION** 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

Basis	Day count basis
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, 2018 is serial number 43101 because it is 43,101 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, 2018, and is purchased by a buyer six months later. The issue date would be January 1, 2018, the settlement date would be July 1, 2018, and the maturity date would be January 1, 2048, which is 30 years after the January 1, 2018, issue date.

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

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

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

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

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

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

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	Description	
07/01/2018	Settlement date	
01/01/2048	Maturity date	
8.0%	Percent coupon	
9.0%	Percent yield	

Data	Description	
2	Frequency is semiannual (see above)	
1	Actual/actual basis (see above)	
Formula	**Description**	**Result**
=DURATION(A2,A3,A4,A5,A6,A7)	The duration, for the bond with the terms above	10.9191453