

# Programming assignment: Implied Spread

You will be given a portfolio of fixed-income government securities (fixed coupon bonds) in an Excel worksheet (in .xlsx format). Below is a sample representation of the first 5 bonds in the .xlsx file:

ID	Country	Price	Coupon	Frequency	Maturity	Nominal
1	France		2.00	Annual	5	100000
2	France		3.00	Annual	7	100000
3	France		1.00	Annual	15	1000000
4	Portugal	102	5.00	Annual	2	50000
5	Portugal	97	3.00	Annual	5	500000

Additionally, you will receive zero-coupon curves in .csv format. Within the Curves file, you will find data for both the France Government curve and the Euribor (swap-based) curve.

Your task is to write an application that:

- A) Reads the bond portfolio and the zero-coupon curves.
- B) Calculates the prices of the French bonds in percentages.
- C) Computes the implied spread (also referred to as the Z-spread) over the Euribor curve for each bond in the portfolio. Note: original prices (except for those of France) are available in the input file. If you're unfamiliar with the term "implied spread" or "z-spread", then you can see the definitions and steps of calculations in wikipedia.
- D) Determines the implied spread of the entire bond portfolio.
- E) Under the assumption that the Greek government curve is 50 basis points above the Italian curve, calculates the price of a Greek bond with the following parameters:

Coupon: 5%

Maturity: 7 years

Frequency: Annual

Nominal: 1 million

You are free to choose any assumptions necessary: discounting methods, methods of interpolation, conventions etc. You can complete this task in the programming language that you prefer. The goal is to write generic code that can handle any number of bonds. You can use any external package/library. You will be evaluated on coding style and mathematical calculations.

If you don't manage to complete all tasks, but you are confident in your approach, then you should send in your solution. You have two hours for this assignment.