

# Project

## Corporate bond liquidity

### Financial Engineering

Consider the interest rate EUR interbank market on the 10th September 2015. Market data can be found in the excel file in attach.

- i) Multicurve-bootstrap of interest rates' curves for the EUR markets (OIS, Euribor 6m) on the 10th September 2015 up to 12y [1].
- ii) Calibrate volatility parameters as in [1] on “diagonal” cash settled swaptions (with normal volatilities) on the 10th September 2015.
- iii) Compute the difference between upper and lower bounds of liquidity Spread in [2] for Santander and BNPP with the time-to-liquidate equal to two weeks and to two months. Use also parameters in i) and ii) on the 10th September 2015.
- iv) Compute BNPP and Santander bond yields on the 10th September 2015 for the liquid bond and with the time-to-liquidate equal to two weeks and to two months as in [2].

*Realize a library in Matlab. Optional: Python.*

Hints:

Pay attention that in a multicurve model, the telescopic sum relation for the floating leg of a swap does not hold anymore. Market model is the Normal formula with the OIS-curve as discounting curve as described in appendix of [1].

[1] R. Baviera (2019), Back-of-the-envelope swaptions in a very parsimonious multicurve interest rate model, *International Journal of Theoretical and Applied Finance*, 22 (5), 1950027.

[2] R. Baviera & A. Nassigh & E. Nastasi (2021). A closed formula for illiquid corporate bonds and an application to the European market. *Journal of International Financial Markets, Institutions and Money*, 71, 101283.

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