**Part 1： Bootstrapping Swap Curves**

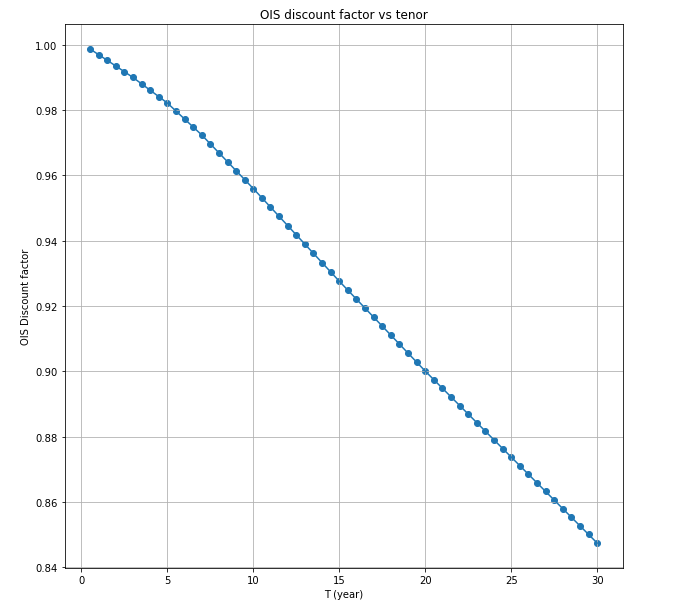
**i)**

For the fed rate and OIS discount of first year:

For the fed rate and OIS discount of the next years:

We use equation 1 to replace in equation 2 so that equation 2 has only one unknown .

When the OIS rate of some tenors is unknown, we can use linear interpolation on OIS discount factor to eliminate the unknowns:



**ii)**

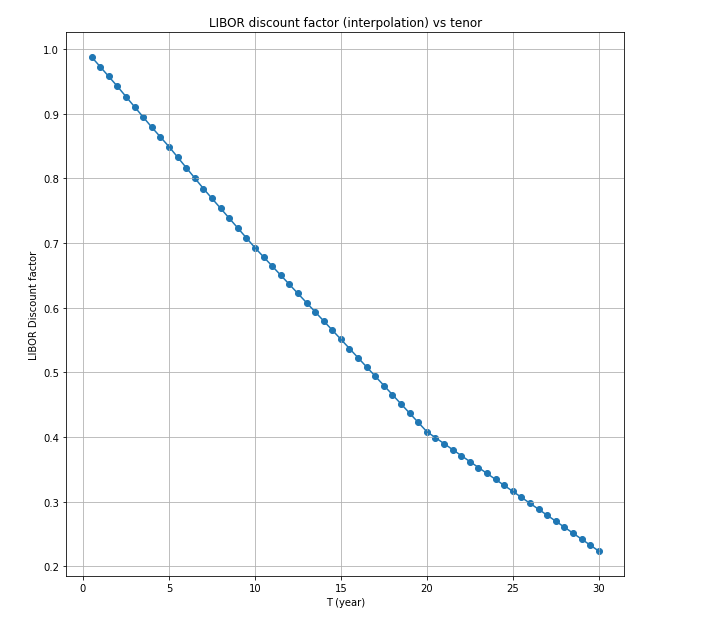
The approach of question 2 is similar to the one of question 1. For the first tenor (0,0.5y):

For the next tenors:

Use equation 1 to replace in equation 2 so that equation 2 has only one unknown .

When the IRS rate of some tenor is unknown, we still use linear interpolation on LIBOR discount factor:

, .



**iii)**

In this equation, the only unknown is .Then we transform the equation:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Expiry | Tenor | Swap\_Rate |
| 0 | 1Y | 1Y | 0.032007 |
| 1 | 1Y | 2Y | 0.033259 |
| 2 | 1Y | 3Y | 0.034011 |
| 3 | 1Y | 5Y | 0.035255 |
| 4 | 1Y | 10Y | 0.038428 |
| 5 | 5Y | 1Y | 0.039274 |
| 6 | 5Y | 2Y | 0.040075 |
| 7 | 5Y | 3Y | 0.040072 |
| 8 | 5Y | 5Y | 0.041093 |
| 9 | 5Y | 10Y | 0.043634 |
| 10 | 10Y | 1Y | 0.042189 |
| 11 | 10Y | 2Y | 0.043116 |
| 12 | 10Y | 3Y | 0.044097 |
| 13 | 10Y | 5Y | 0.046249 |
| 14 | 10Y | 10Y | 0.053458 |