

Explanatory note

01.01.2014

Calculating swap rates and swap rate proxies for the purpose of the Commission Decision 2012/21/EU of 21.12.2011 on SGEI

This note sets out the methodology for establishing the swap rates referred to in the Commission Decision 2012/21/EU¹.

1. Definition of swap rates

The swap rate of a given maturity is the fixed rate leg of a fixed-versus-floating interest rate swap (IRS). An IRS is a derivative instrument allowing an investor to hedge against his interest rate exposure. It is a contract between two counterparties, who each agree to make a periodical payment to the other. These payments are based on different interest rates applied to an agreed notional amount (the "principal"). In a fixed versus floating IRS, one will exchange a fixed rate against a floating rate. Typically, one party will pay the fixed rate (e.g. 4.50%) and the other party will pay the floating rate (usually the short term interbank rate, e.g. the 6-months EURIBOR). Due to the time value of money and the expectations on the future development of the IBOR, different maturities will be characterized by different swap rates (the "swap curve").

Swap rates are used in the financial markets as benchmarks for establishing the funding rate. In practice, swap rates are often used as an indicator of what markets consider being the prevailing risk-free yield².

2. Availability of swap rates

Swap rates are widely available in different currencies, however not for all currencies. As of January 2014 there are swap rates for all European Union currencies except for the Lithuanian Litas (LTL). The method for establishing a proxy for the swap rates in Lithuanian Litas is explained under point 4

¹ Commission Decision 2012/21/EU of 21 December 2011 on the application of Article 106(2) of the Treaty on the Functioning of the European Union to State aid in the form of public service compensation granted to certain undertakings entrusted with the operation of services of general economic interest (OJ L 7, 11.1.2012, p. 3).

² For benchmark purposes, swap rates have certain advantages compared to observed rates on sovereign bonds, the other main traditional type of risk free debt instrument. First, since the principal is not exchanged in an interest rate swap, swap rates only contain the counterparty default risk on the stream of interest payments, but not on the principal. Further, since an IRS is a standard ("vanilla") and liquid instrument, swap rates tend to contain a lower liquidity premium than observed bond rates. As a result, the swap curve is a fairly reliable barometer of what markets consider being the prevailing risk-free yield curve. Finally, swap rates exist for a wider range of maturities than rates for sovereign bonds.

below³. For all remaining EU currencies swap rates are available for all maturities from 1 to 10 years. The historical data is published by data providers like Bloomberg and Thomson Reuters.

3. Available swap rates

If the swap rates are to be applicable as of month T the work on the swap rate grid including publication is performed during month T-1. The numbers shown in the grid represent the average of the daily swap rates (based on the mid-price quote) across the three months (T-2, T-3 and T-4) preceding the publishing of the grid.

4. Swap rate proxies for Latvia and Lithuania

There are no swap rates available for the Lithuanian Litas (LTL). It is however possible to derive a proxy for each swap rate by adding a corresponding swap spread⁴ to the government bond yields of these countries. The method consists of two steps. First deriving the swap spread and then deriving the swap rate proxy by adding the swap spread to the government bond yield with corresponding maturity.

- **Step 1 - calculating the swap spread**

The swap spread is derived from government bonds in the Euro zone (EUR swap spread) on the basis of AAA-rated euro area central government bonds. The necessary yield data is published daily by the European Central Bank⁵. The swap spread is calculated using these yields and the EUR swap rate⁶ according to the following formula:

$$\text{swap rate} - \text{government bond yield} = \text{swap spread}$$

The swap spread used for the grid calculation is the average of the daily swap spreads for the months T-2, T-3 and T-4.

- **Step 2 - calculating the swap rate proxy**

The swap rate proxies are derived as the EUR swap spreads for maturities from 1 to 10 years estimated according to the above formula are added to the government bond yields with matching

³ In January 2014 Latvia entered the Euro zone. Before January 2014 there were no swap rates for the Latvian Lat (LVL) as well. The swap rate proxies for the Latvian Lat before Latvia entered the Euro zone were calculated as explained in point 4 of this note.

⁴ The swap spread is the difference between the swap rate and the lending rate offered through investment vehicles with comparable characteristics (in this case government bonds). It reflects the general creditworthiness of the major banks compared to that of government bonds.

⁵ The yield data can be found at the following links: <http://www.ecb.int/stats/money/yc/html/index.en.html> and <http://sdw.ecb.europa.eu/browse.do?node=3570581>

⁶ Historical swap rate data is available through data providers like Bloomberg and Thomson Reuters.

maturity of Lithuania. Linear extrapolation/interpolation on available government bond yields⁷ of Lithuania in local currency (LTL) is used to derive the bond yields with the needed maturity. For example to derive the government bond yield of Lithuania for a maturity of 5 years on, say, 31.05.2013 we use two available Lithuanian bonds with time to maturity closest to 5 years:

Bloomberg bond identifier	Bond maturity	Time to maturity	Yield-to-maturity
LITHGB 5.2 03/28/2018 Corp	28/03/2018	4.82 years	2.22%
LITHGB 3.7 10/25/2019 Corp	25/10/2019	6.40 years	2.68%

The interpolated 5-year government bond yield for Lithuania on 31.05.2013 can be calculated using the above data according to the following formula⁸:

$$2.22\% - \frac{(2.68\% - 2.22\%)}{(6.40 - 4.82)} * (4.82 - 5) = 2.27\%$$

All available Lithuanian government bonds are used to calculate the yields with maturity from 1 to 10 years for the last trading day of each of the months T-2, T-3 and T-4. The average of these rates is used for the calculation of each swap rate proxy.

The swap rate proxy is finally calculated according to the following formula:

$$\text{swap rate proxy} = \text{EUR swap spread} + \text{government bond yield}$$

⁷ Historical data on government bond yields is available through data providers like Bloomberg and Thomson Reuters.

⁸ $\text{yield1} - (\text{yield2} - \text{yield1}) / (\text{time-to-maturity2} - \text{time-to-maturity1}) * (\text{time-to-maturity1} - \text{maturity}) = \text{interpolated yield}$