SIX Swiss Exchange

Guide to the Calculation of Accrued Interest on SWXess

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1 Introduction

This document covers the accrued interest calculation methods supported by SIX Swiss Exchange and illustrates the interpretation of the International Capital Market Association (ICMA) Actual/Actual rules.

1.1 Terms and Abbreviations

The following figure should be read in conjunction with the definitions in the table below.

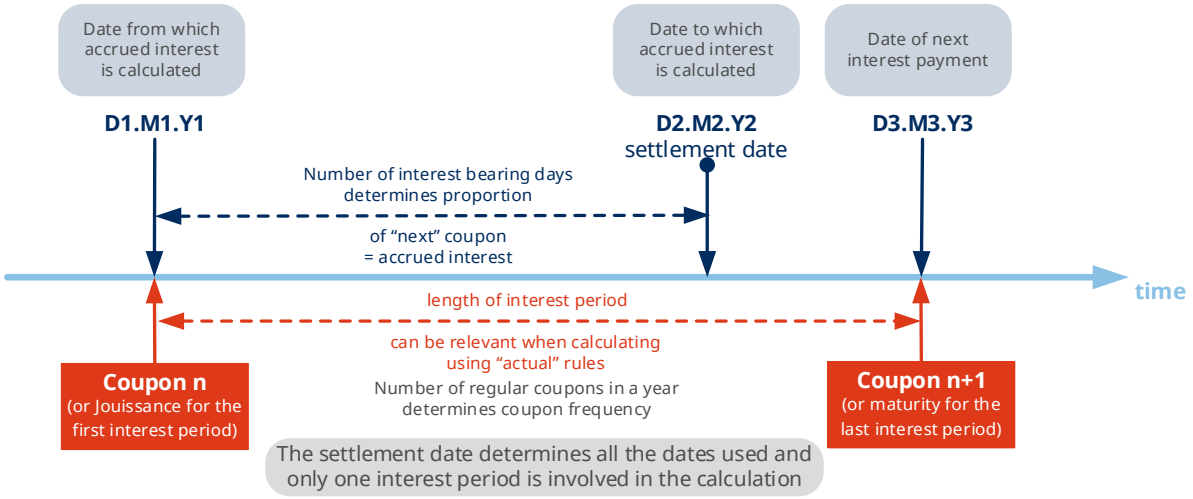


Figure 1: Definitions

Term/Abbreviation	Explanation
accrued interest	The proportion of the coupon amount to which the seller is entitled. The basis of the calculation is the assumption that the buyer receives the full coupon payment and must pay the seller that part of the coupon representing the period between the previous coupon payment and the settlement date
coupon frequency	The number of regular coupon payments in a year
currency holiday	A day on which the central bank of a given currency is not open for settlement. See SIX Trading & Currency Holiday Calendar
D1.M1.Y1	The date from which accrued interest is calculated
D2.M2.Y2	The date to which accrued interest is calculated
D3.M3.Y3	The date of the next relevant interest payment
FRN	Floating Rate Note
jouissance	The first date of interest entitlement
Liberierung	First date on which a bond trade can be settled and the date on which subscription payments are due
maturity	The last date of interest entitlement
RDI	SWXess Reference Data Interface
RFR	Risk-free rate
settlement	The process of transferring securities or cash from one party to another following a trade
settlement date	The date on which the trade will be settled
SWXess	SIX Swiss Exchange trading platform
trade date	The date on which the trade took place

2 Calculation of Accrued Interest

The calculation of the accrued interest amount for a particular trade proceeds as follows:

- Determination of the settlement date
- Determination of the date of the previous coupon payment
- Determination of the number of days for which interest is to be accrued
- Determination of the number of days in the year for which interest is to be accrued
- Calculation of the accrued interest

2.1 Determination of the Settlement Date

The settlement date for spot trades in a security for a particular trade is determined using:

- The defined settlement cycle for the security (for example T+2, which means that the settlement date is the trade date plus two 'value' days)
- The date upon which subscription payments are due ("Liberierung")

When counting days forward from the trade date to determine the settlement date, all non-value days are skipped. For these purposes, a value day is defined as a weekday on which the nominal currency has no holiday. This can be determined using the settlement currency holiday calendar for the security in question.

If the trade date falls on a relevant currency holiday for the security, the settlement cycle is not extended by a day, as the trade date 'T' is not part of the settlement cycle. However, if interest needs to be calculated for the same instrument for a trade with an execution date immediately prior to that day, then the currency holiday will be considered. Business holidays (other than weekends) are not considered here, thus it is important to distinguish between the market- and the currency-holiday calendars.

If the calculated settlement date for a security is earlier than "Liberierung", then the date of "Liberierung" is used.

If any of the following conditions is true, there is **no** accrued interest:

- The settlement date is earlier than or falls on the first date of interest entitlement ("Jouissance")
- The settlement date falls on an interest payment date (as bonds are "ex coupon" then).
- The settlement date falls on or after the maturity date
- The instrument is not traded in percent
- No settlement date was provided for the trade
- The requested settlement date is not within the instrument's settlement cycle, as published in RDI
- The "flat" day count method applies for the trade

2.2 Determination of Accrued Interest Dates

The appropriate interest payment period record is the one in which the settlement date is equal to or later than the start of interest period, and earlier than the relevant coupon's payment date.

The date from which accrued interest is calculated **(D1.M1.Y1)** is that from which the start of the interest period within which the **settlement date** falls.

The date to which accrued interest is calculated **(D2.M2.Y2)** is by default the **settlement date**, unless that is later than or equal to the maturity date of the bond, in which case D2.M2.Y2 is set to the maturity date.

For trades in instruments using the Actual/Actual (ICMA) day count method, **(D3.M3.Y3)** is defined as the coupon payment date for the interest payment period within which the **settlement date** falls, or maturity, if the settlement date is later than or equal to the maturity date of the bond.

2.3 Determination of Number of Interest-bearing Days

The dates D1.M1.Y1 (start date) and D2.M2.Y2 (end date) define the period over which interest is accrued. The number of interest-bearing days and the number of days in the year by which the basic accrued interest amount is calculated depends on the day count method defined for the bond in question.

For further details of each method, please consult the ISO website.

Day Count Method - [ISO code]	Rule for Determining Number of Interest Bearing Days (N)	Basic Rule for Determining the Length of a "Year"
Flat (No Accrued Interest) - [A000]	–	–
30/360 (ISDA) - [A001]	30 days/month, except for February which is 28 or, in leap years, 29 days. Additionally, – if D2 is 31 and D1 is 30 or 31, D2 is 30 – if D1 is 31, D1 is 30	360 days/year
Actual/360 - [A004]	days/month as per calendar	360 days/year
Actual/365 (Fixed) - [A005]	days/month as per calendar	365 days/year
Actual/Actual (ICMA) - [A006]	days/month as per calendar	days/year as per calendar
Actual/365L - [A009]	days/month as per calendar	365 or 366 days/year
30/360 (ICMA) - [A011]	30 days/month, except for February which is 28 or, in leap years, 29 days	360 days/year
Eurobond basis model 3 - [A013]	30 days/month	360 days/year

2.4 Calculation of the Basic Accrued Interest Amount

Once the number of interest-bearing days and days in the year have been established, the calculation of accrued interest for trades in instruments not referencing risk-free rates can be calculated.

Day Count Method	Basic Accrued Interest Amount, A (F = annual coupon frequency; N = number of interest-bearing days)
Eurobond basis model 3	A = coupon amount * (N / 360)
30/360 (ICMA)	A = coupon amount * (N / 360)
Actual/365 (Fixed)	A = coupon amount * (N / 365)
Actual/360	A = coupon amount * (N / 360)
30/360 (ISDA)	A = coupon amount * (N / 360)
Actual/365L	A = coupon amount * (N / Y) where Y is the number of days in the year in which the coupon ends
Actual/Actual (ICMA)	For regular coupons: A = (coupon amount / F) * (N / C) where **C** = number of days between D1.M1.Y1 and D3.M3.Y3. For irregular coupons: A = (coupon amount / F) * $\sum_i (N_i / C_i)$ where $\mathbf{N_i}$ is the number of days of accrued interest falling into period **i**, and $\mathbf{C_i}$ = the length of period **i** in days.

3 The Actual/Actual Method

3.1 SWXess Interpretation of the Actual/Actual (ICMA) Method

This method includes a distinction between regular and irregular interest periods.

Regular interest periods are an exact multiple of 1, 2, 3, 4, 6 or 12 months long. Determining whether the coupon is regular or not is achieved by comparing the length of the period between D1.M1.Y1 and D3.M3.Y3 with the length of a single regular interest period as implied by the coupon frequency. Regular coupons are all assumed to fall on the same day in the month, at exact monthly intervals, wherever possible. If the given date does not exist (e.g., 31 June), the last day in the given month is used instead. If the interest period concerned (D1.M1.Y1 to D3.M3.Y3) does not meet these criteria, it is regarded as irregular, which will require the generation of "notional" interest periods.

Notional interest periods are generated so that their length conforms with that implied by the instrument's coupon frequency. The interest-bearing days are then spread over the notional period(s), each with an appropriate daily accrual rate. In irregular coupon periods, the daily accrued interest rate is not necessarily constant throughout the interest period but can "jump" in value at each notional coupon date.

Each new notional period is calculated with reference to an "anchor" date, which is the date of the interest payment record from which the notional coupons are calculated. The dates for the notional interest period are set by counting in multiples of months, as determined by the coupon frequency (**F**), and not by counting from the previously calculated notional coupon date, so as to avoid any "date-drift".

If the interest periods are not considered as being regular and the coupon frequency is not 1, 2, 3, 4, 6 or 12 notional interest periods are generated at yearly intervals, using the same date in the year as the anchor date, substituting 28 February if the anchor date is 29 February where necessary.

Notional interest periods are normally generated by counting backwards from the next coupon date (D3.M3.Y3). For irregular last coupons however, where D3.M3.Y3 is equal to the maturity date, the notional periods count forwards from the date from which accrued interest is calculated (D1.M1.Y1). The reason for this approach is that it aligns the notional periods with the actual interest payment dates for most known bonds (generally speaking only the first and last interest periods are irregular, if at all). The start date for the notional periods (D3.M3.Y3 or D1.M1.Y1) thus becomes the anchor date.

3.2 Actual/Actual (ICMA) Examples

There follow a number of examples to illustrate the manner in which SIX interprets the Actual/Actual method.

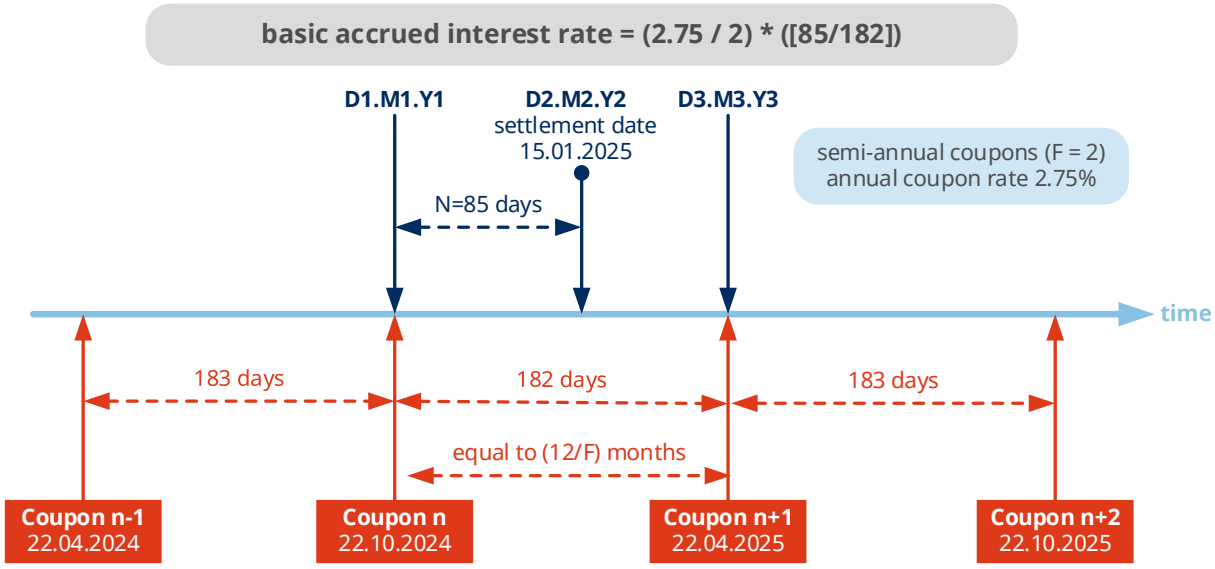


Figure 2: Example of regular interest period with semi-annual coupon payments

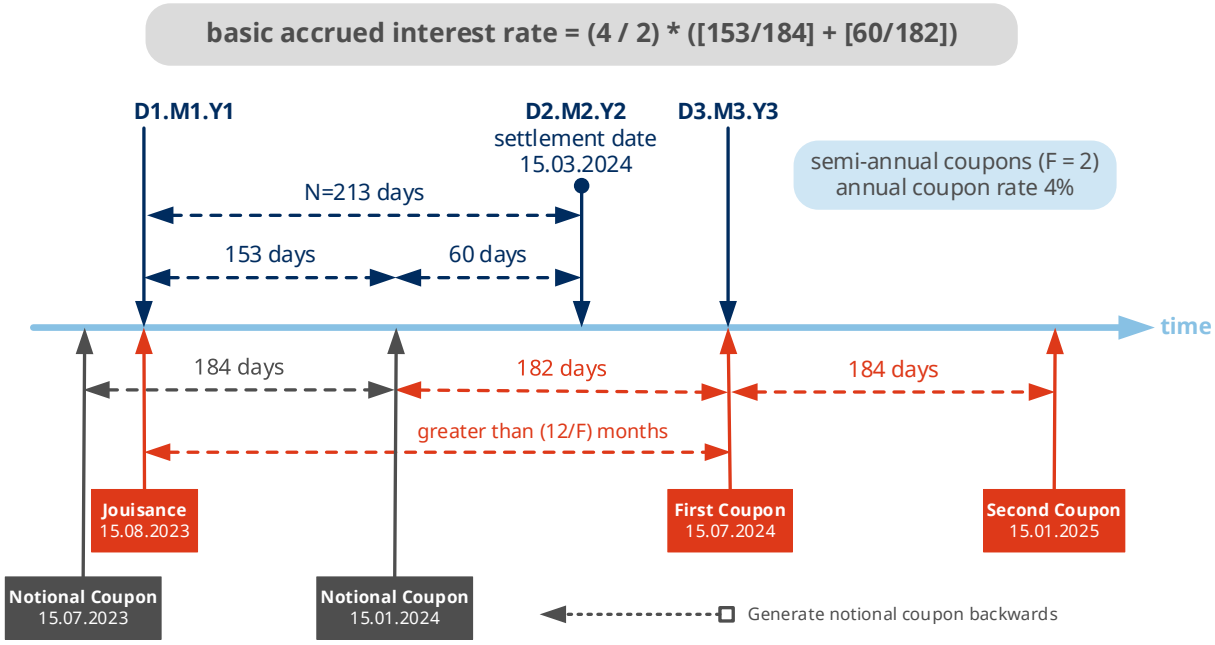


Figure 3: Example of irregular (long) initial interest period with semi-annual coupon payments

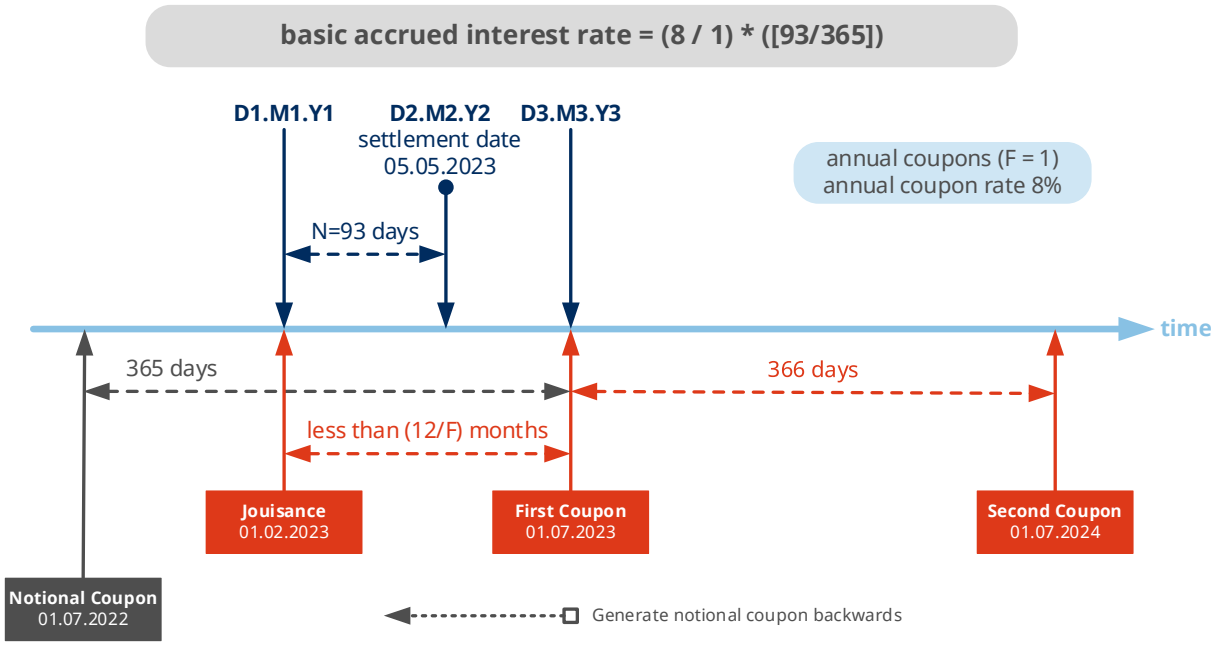


Figure 4: Example of irregular (short) initial interest period with annual coupon payments

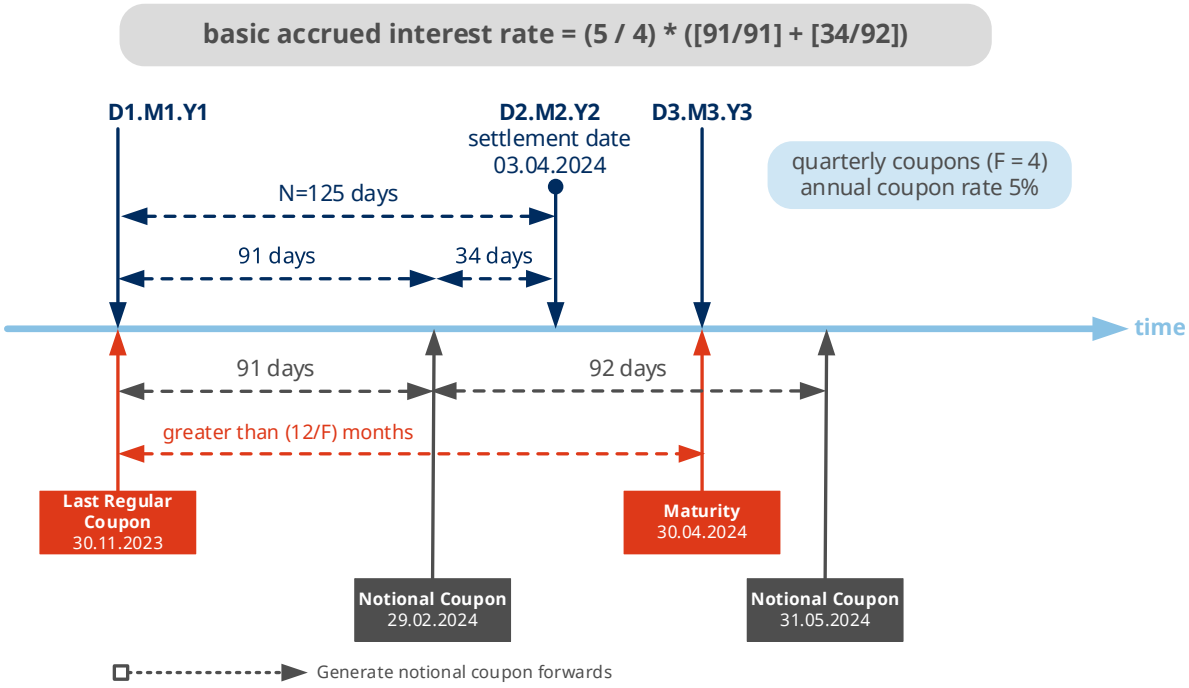


Figure 5: Example of irregular (short) final interest period with semi-annual coupon payments

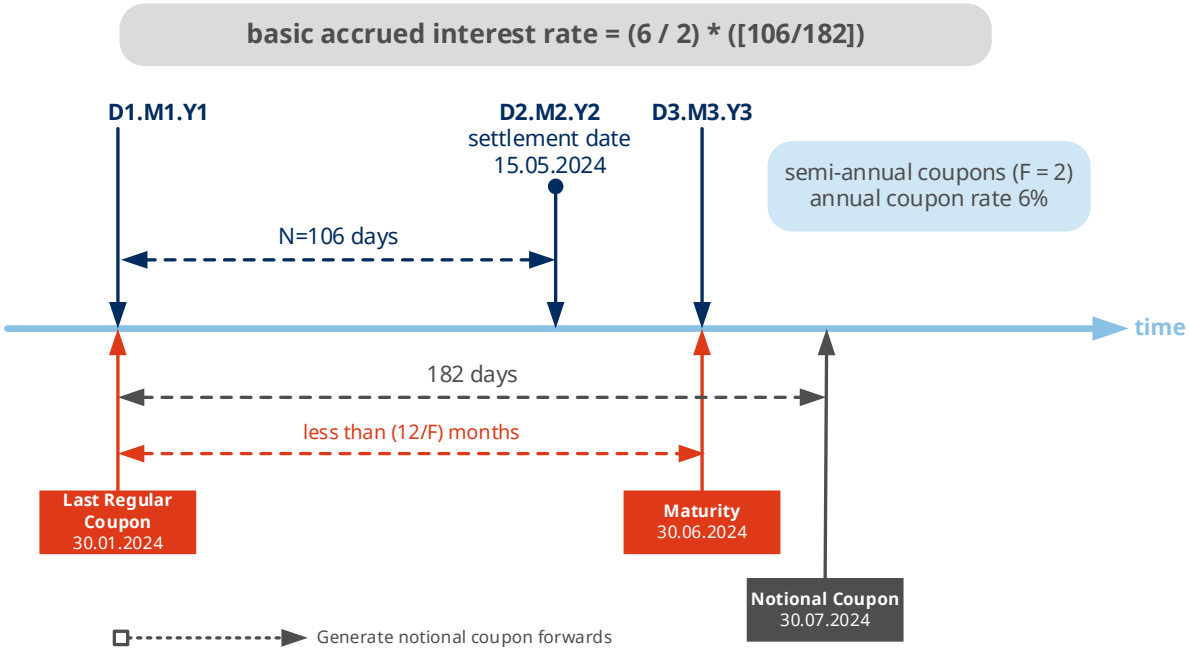


Figure 6: Example of irregular (short) final interest period with semi-annual coupon payments

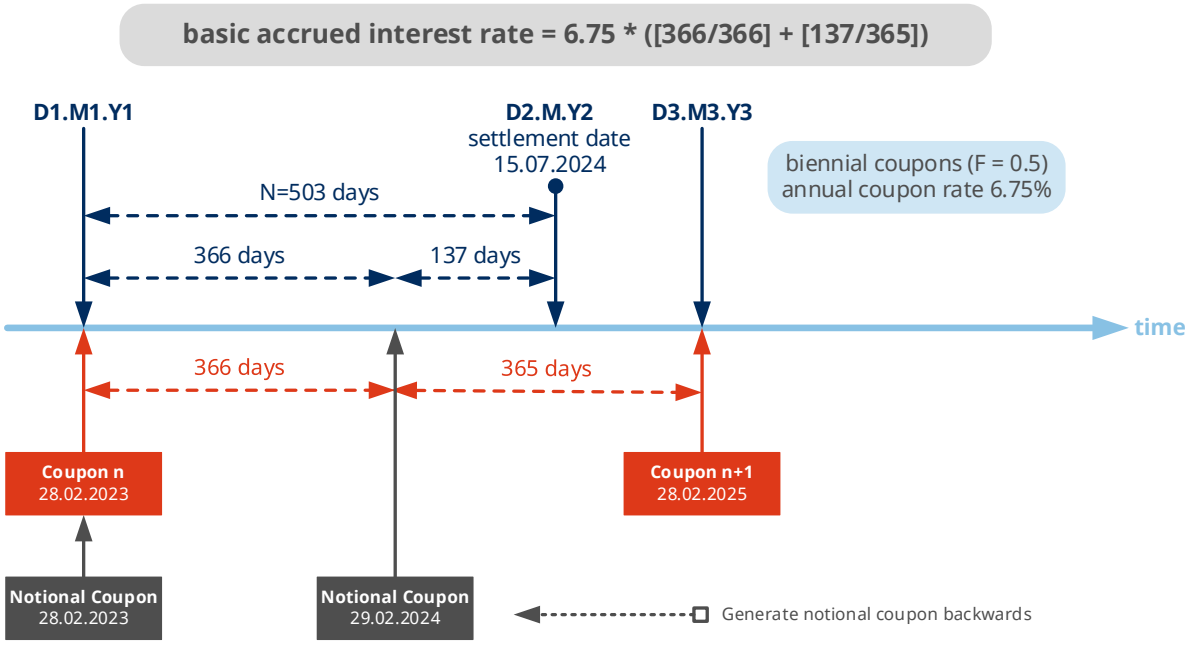


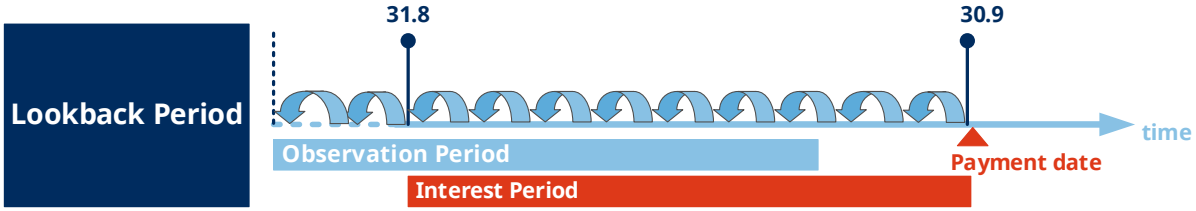
Figure 7: Example of aperiodic interest period with biennial coupon payments

4 Accrued Interest for Floating Rate Notes Based on Risk-free Rates

With the cessation of LIBOR, the market has moved over to using alternative overnight rates which are viewed as being “risk-free” because they are based on real transactions and so reflect the actual overnight interest rates that banks pay to borrow money.

4.1 Key Differences Between Using RFRs and LIBOR for Accrued Interest

Whereas previously all accrued interest methods in SWXess were ‘forward-looking’, with the interest payment set at the beginning of the interest period, in order to accurately use a compounded risk-free rate as a FRN benchmark, it is best when used in arrears, that is ‘backward looking’. As the accrued interest for trades in FRNs referencing RFRs is based on real-time market activity, the applicable rate of interest will not be known at the start of the coupon period and to enable the relevant RFR rate to be used for the entire interest period covered by a trade (for which rates are needed up to the T+2 settlement date), the RFR to be used will need to be taken from an observation period which precedes both the start and end of the trade’s actual interest period dates by a number of days, as shown below:



4.2 General Points Concerning Floating Rate Notes Based on Risk-free Rates

SIX Swiss Exchange supports the listing and trading of FRNs based on risk-free rates in CHF, USD, GBP, EUR and JPY.

The main differences in the reference data of, and the calculation of accrued interest for such floating rate notes are:

- A Modified Business Day Convention must be defined for all FRNs;
- The rate of the accrued interest to be applied to trades will be compounded;
- The issuer may define a margin rate which is to be added to the calculated compounded interest rate;
- The overall interest rate will be floored, to avoid any negative cash flow;
- The calculated compounded rate will be rounded according to the latest guidance laid out by ISDA;
- For FRNs denominated in CHF, USD or EUR, the Actual/360 day count method will be used;
- For FRNs denominated in GBP and JPY, the Actual/365 (Fixed) day count method will be used;
- The length of the lookback for an instrument can be individually configured by the issuer, within a given range;
- For FRNs based on RFRs, the field *Interest Rate* in the Reference Data Interface (RDI) will convey the margin rate of the bond and not its underlying interest rate (as that is unknown at the time of publication).
- The Currency Holiday calendar for the given denomination published on the SIX Swiss Exchange website can be used as a proxy for the days on which a new RFR for the given currency should be set.

SIX
Pfingstweidstrasse 110
8005 Zurich
Switzerland

T +41 58 399 2111