Chapter 10A

MCD Annual Percentage Rate of Charge

10A.2 APRC: mathematical formula and assumptions

10A.2.1 G The mathematical formula for calculating the *APRC* in ■ MCOB 10A.2.2 R is a basic equation for establishing the *APRC*. This equates, on an annual basis, the total present value of drawdowns on the one hand and the total present value of repayments and payments of charges on the other.

[**Note:** Annex I, Part I of the *MCD*]

10A.2.2 R The equation referred to in ■ MCOB 10A.2.1 G is:

$$\sum_{k=1}^{m} C_k (1+X)^{-t_k} = \sum_{l=1}^{m'} D_l (1+X)^{-s_l}$$

where:

- X is the *APRC*
- m is the number of the last drawdown
- k is the number of a drawdown, thus $1 \leq k \leq m$
- C_k is the amount of drawdown k
- t_k is the interval, expressed in years and fractions of a year, between the date of the first drawdown and the date of each subsequent drawdown, thus $t_1 = 0$
- m' is the number of the last repayment or payment of charges
- l is the number of a repayment or payment of charges
- D_l is the amount of a repayment or payment of charges
- s_l is the interval, expressed in years and fractions of a year, between the date of the first drawdown and the date of each repayment or payment of charges.

[**Note:** Annex I, Part I of the *MCD*]

10A.2.3 R The following matters must be applied when calculating the *APRC*.

(1) The amounts paid by both parties at different times must not necessarily be equal and must not necessarily be paid at equal intervals.

(2) The starting date must be that of the first drawdown.

(3) (a) Intervals between dates used in the calculations must be expressed in years or in fractions of a year. A year is presumed to have 365 days (or 366 days for leap years), 52 weeks or 12 equal months. An equal month is presumed to have 30.41666 days (ie, 365/12), regardless of whether or not it is a leap year.

(b) Where intervals between dates used in the calculations cannot be expressed as a whole number of weeks, months or years, the intervals must be expressed as a whole number of one of those periods in combination with a number of days. Where using days:

(i) every day must be counted, including weekends and holidays;

(ii) equal periods and then days must be counted backwards to the date of the initial drawdown;

(iii) the length of the period of days must be obtained excluding the first day and including the last day and must be expressed in years by dividing this period by the number of days (365 or 366 days) of the complete year counted backwards from the last day to the same day of the previous year.

(4) The result of the calculation must be expressed with an accuracy of at least one decimal place. If the figure at the following decimal place is greater than or equal to 5, the figure at the preceding decimal place must be increased by one.

(5) The equation can be rewritten using a single sum and the concept of flows (Ak), which will be positive or negative, in other words either paid or received during periods 1 to n, expressed in years, using the following formula:

$$s = \sum_{k=1}^{n} A_k (1+X)^{-t_k}$$

where s is the present balance of flows. If the aim is to maintain the equivalence of flows, the value of s will be zero.

[**Note:** Annex I, Part I of the *MCD*]