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To the Chief Financial Officer
local authorities in England, Scotland and Wales

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Circular 151

CALCULATION OF INTEREST RATES ON FIXED RATE AND VARIABLE RATE LOANS

Interest rates on PWLB fixed rate and variable rate loans are determined by the UK Debt Management Office (DMO) using a methodology specified by HM Treasury in accordance with section 5 of the National Loans Act 1968. The methodology is designed to ensure that the PWLB does not on-lend at rates lower than those at which the Government could notionally borrow, and generally to ensure compliance with the policies of HM Treasury.

This Circular replaces Circular 149 of 4 January 2011.

FIXED RATE LOANS

Fixed rate loans are repayable by one of three methods:

(i) **Maturity**: half-yearly payments of interest only, with a single repayment of principal at the end of the term.
(ii) **EIP** (Equal Instalments of Principal): equal half-yearly instalments of principal together with interest on the balance outstanding at the time.
(iii) **Annuity** or **ER** (Equal Repayments): fixed half-yearly payments to include principal and interest.

Repayments are at half-yearly intervals, with an initial broken period as necessary.

The rate of interest that applies to a loan depends on its maturity and the method of repayment (i.e. maturity, EIP or ER). Loan periods are divided into half year maturity intervals or bands, and the rate of interest is the same for all loans of a given method of repayment in a given band.

For each of the three methods of repayment the rates are calculated in similar ways. First, for each method of repayment the maturity bands are converted into equivalent average life bands. The average life of a loan is calculated from the time to maturity of the loan using a time-weighted average of capital repayments (i.e. the interest payments are not included in the calculation). For maturity loans the average life is equal to the time to maturity of the loan, whilst for EIP and ER loans the average life is less than the time to maturity. The formulae used to calculate the average life appear in the Annex to this circular.

At each determination of rates the DMO uses current gilt prices to estimate a gilt par yield curve. For new loan rates the maximum par yield for each average life band is then calculated. Next, a margin is added. This margin is currently 100 basis points at all maturities. Finally, the resultant rate is rounded up to the nearest basis point to give the new loan rate for the band. For **early repayment rates** the minimum par yield for each average life band is calculated. Next, a margin is subtracted. This margin is currently 11 basis points at all maturities. Finally, the resultant rate is rounded down to the nearest basis point to give the early repayment rate for the band.

Note: The yield curve model used by the DMO is the Variable Roughness Penalty (VRP) model developed by the Bank of England and employed by the DMO since 2007. For more information on the VRP model see: http://www.bankofengland.co.uk/statistics/yieldcurve/

VARIABLE RATE LOANS

Variable rate loans are repayable by one of two methods:

(i) **Maturity**: monthly, quarterly or half-yearly payments of interest only with a single repayment of principal at the end of the term.
(ii) **EIP** (Equal Instalments of Principal): equal monthly, quarterly or half-yearly instalments of principal together with interest on the balance outstanding at the time.

Repayments are at one, three or six monthly intervals.

Interest rates for variable rate loans are calculated by taking the general collateral repo rate for the time horizon that corresponds to the repayment frequency of the loan, as fixed by the British Bankers' Association (BBA) at 11:00 on the day concerned, adding a margin and then rounding the resultant rate up to the nearest basis point. The margin is the same for both types of variable rate loan and is 10 basis points for loans agreed before 12:30 on 20 October 2010 and 100 basis points for loans agreed thereafter. **Early repayment rates** are taken from the set of rates for loans agreed before 12:30 on 20 October 2010.

CHANGES TO CALCULATIONS

HM Treasury reserves the right to alter formulae, margins or other parameters used in the calculation of the rates for PWLB fixed rate loans and variable rate loans, exceptionally without notice.

FURTHER ENQUIRIES

Questions on this circular should be directed to Mark Deacon at the UK Debt Management Office, telephone: **0845 357 6516**, e-mail: AnalysisandResearch@dmo.gsi.gov.uk.

MARK FRANKEL
SECRETARY

ANNEX: FORMULAE FOR THE AVERAGE LIFE OF PWLB FIXED RATE LOANS

The following formulae are used to calculate the average life of PWLB fixed rate loans.

(i) Maturity Loans:

Average life of the loan (years) = Time to maturity of the loan (years)

For example, the average life of a 50 year maturity loan would be 50 years.

(ii) EIP Loans:

$$\text{Average life of the loan (years)} = \left(\frac{\text{Time to maturity of the loan (years)}}{2}\right) + 0.25$$

For example, the average life of a 50 year EIP loan would be 25.25 years.

(iii) Annuity or ER Loans:

$$\text{Average life of the loan (years)} = \frac{\text{Time to maturity of the loan (years)}}{1 - \dfrac{1}{\left(1 + \dfrac{Y}{200}\right)^{2\,\text{x}\,\text{Time to maturity (years)}}}} - \frac{100}{Y}$$

where, Y is the par yield corresponding to the average life of the loan (expressed as a percentage).

Note: For ER loans the average life is dependent on the level of yields at the time at which rates are calculated and is derived using an iterative process.

For example, the average life of a 50 year ER loan would be 33.30 years, assuming that the 33.30 year par yield is 4.175%.