



Order book for Retail Bonds

Accrued Interest - A Guide for Private Investors

Introduction

This guide aims to provide an overview of accrued interest for private investors wishing to trade bonds on the London Stock Exchange's new electronic Order book for Retail Bonds (ORB). It provides summary information on the various calculation methods and gives worked examples.

This guide may serve as a companion to the publication, *Trading Bonds on the London Stock Exchange - A Guide for Private Investors*, which gives an overview of the various types of bonds available and the types of issuers, in addition to providing introductory information on bond pricing and yields.

Clean and Dirty Prices

On the electronic Order book for Retail Bonds prices are quoted on a 'clean' basis. This follows the standard quoting convention in the professional bond markets. A 'clean' price is one where accrued interest is not included. When an investor buys a bond however, they pay the bond's 'dirty' price, which is the clean price plus the accrued interest.

When a bond is traded between coupon payment dates, accrued interest is paid to compensate the seller for the period during which the seller has held the bond, but for which they will receive no interest from the bond's issuer (as the seller will not be holding the bond when the next coupon payment date arrives). Because both the seller and the buyer will only have held the bond for part of the interest-earning period, but the buyer will receive the full coupon by holding the bond on the coupon date, the buyer compensates the seller with a pro-rata share of the next coupon payable.

Calculating Accrued Interest

A simplified example will highlight how the accrued interest amount for a particular bond is calculated. If a bond pays an annual coupon of 8% the bond holder will receive an interest payment of £80 each year for a £1,000 nominal holding in that bond.

If however the bond holder chooses to sell the bond halfway through the year, he will have accrued six months of interest (£40) but this will be received by the buyer of the bond who will receive the full coupon amount of £80 at the end of the annual coupon period.

At the time of settlement of the bond trade, the bond buyer compensates the bond seller by paying the accrued interest. The bond buyer does this by paying the 'dirty' price. For simplicity, if we assume that the bond in our example trades at par value, the 'clean' price would be £100 (because bonds are quoted in terms of £100 nominal, or as a percentage of par). The dirty price, reflecting the £40 per £1,000 nominal, will therefore be £104.

Day Count Conventions

In practice of course, these calculations can be considerably more complex. The bond will most likely not be trading at par value and the formula applied to calculate the exact proportion of the coupon period on which the bond seller is eligible to receive interest will vary depending on the terms of the bond.

There are a variety of methods for determining both the number of days assumed to be in the coupon period as well as the number of days within that coupon period on which accrued interest is payable to the seller. The 'day count convention' applied when calculating accrued interest is specific to the terms of the particular bond. For corporate bonds, this information is specified in the bond's prospectus.

The main day count conventions applied when calculating accrued interest are: ACT/ACT, 30/360, ACT/360 and ACT/365.



ACT/ACT

For gilts and many corporate bonds, the standard day count convention is ACT/ACT. This means that the calculation takes the actual number of days on which the seller has accrued interest (the period between the previous coupon date and the settlement date of the bond trade) and divides this by the actual number of days in the interest period to determine which proportion of the coupon amount should accrue to the bond seller.

For ACT/ACT, the formula to calculate the accrued interest per £100 nominal is:

$$\text{Accrued Interest} = \frac{\text{actual days between previous coupon and sett. date}}{\text{actual days in coupon period}} \times \text{coupon amount}$$

ACT/ACT Example (annual coupon): Marks & Spencer corporate bond

ORB identifiers

Name: MARKS & SPENCER PLC 5.625% NTS 24/03/14
TIDM: 48FD
ISIN: XS0188430721

Coupon date: 24 March
Annual Coupon: 5.625%
Trade Date: 5 August 2010 (T+3 settlement on 10 August 2010)
Clean Price: 105.13

$$\begin{aligned} \text{Accrued Interest} &= \frac{139 \text{ (period between 24 Mar 2010 and 10 Aug 2010)}}{365 \text{ (period between 24 Mar 2010 and 24 Mar 2011)}} \times 5.625 \\ &= 2.1421233 \end{aligned}$$

$$\text{Dirty price} = 107.2721233 \text{ (clean price of 105.13 + accrued interest)}$$

The annual coupon rate is the interest rate paid by the bond and is the percentage figure showing in the bond's name. The coupon amount is the interest payable for a particular coupon period. So for ACT/ACT bonds where interest is paid semi-annually, as is the case for UK gilts, the coupon amount will be half the annual coupon rate.

ACT/ACT Example (semi-annual coupon): UK gilt

ORB identifiers

Name: TREASURY 4% TREASURY GILT 16
TIDM: T16
ISIN: GB00B0V3WX43

Coupon date: 7 March and 7 September
Annual Coupon: 4%
Trade Date: 12 August 2010 (T+1 settlement on 13 August 2010)
Clean Price: 109.61

$$\begin{aligned} \text{Accrued Interest} &= \frac{159 \text{ (period between 7 Mar 2010 and 13 Aug 2010)}}{184 \text{ (period between 7 Mar and 7 Sep 2010)}} \times \frac{4.00}{2} \\ &= 1.728261 \end{aligned}$$

$$\text{Dirty price} = 111.338261$$

30/360 and 30E/360

Many corporate bonds use the 30/360 day count convention. This approach always assumes a fixed number of 360 days in the annual coupon period rather than an actual number of days. Similarly, when calculating the number of days on which accrued interest is payable, it assumes 30 days for each month even where months in the period may have 28, 29 or 31 days.

30E/360 Example: BT corporate bond

ORB identifiers

Name: BRITISH TELECOMMUNICATIONS PLC 5.75% BDS 17/12/28

TIDM: 72NS

ISIN: XS0097283096

Coupon date: 7 December

Annual Coupon: 5.75%

Trade Date: 13 August 2010 (T+3 settlement on 18 August 2010)

Clean Price: 94.15

Accrued Interest = $\frac{251^* \text{ (period between 7 Dec 2009 and 18 Aug 2010)}}{360} \times 5.75$

= 4.00902778

Dirty price = 98.15902778

*251 days is calculated as 30 days in each full month (January to July 2010) + 24 days in Dec 2009 + 17 days in August 2010.

In the Eurobond market, the standard version of this convention is known as 30E/360, as used in the example above. This '30 European' convention means that when one of the calculation dates (either the previous coupon date or the settlement date) falls on the 31st of the month, it is assumed to be the 30th for the purposes of the calculation. In the US markets, the 30/360 convention uses slightly different assumptions. Like the European 30E/360 convention, where the first date (the previous coupon date) falls on the 31st of the month, this is taken to be the 30th, however where the second date (the settlement date) falls on the 31st, if the start date is earlier than 30th, the second date will be equal to the 1st of the following month, otherwise the second date will be taken as the 30th of the month.

For most of the time, the 30/360 and 30E/360 calculations will return the same values for accrued interest calculations. Only where a settlement date falls on 31st of the month will there be minor differences in the accrued interest values returned.

Example: 30E/360 and 30/360 Variations

Coupon date: 14 March

Annual Coupon: 4.25%

Trade Date: 26 August 2010 (T+3 settlement on 31 August 2010)

Clean Price: 93.75

Because the settlement day falls on the 31st of the month, the 30E/360 convention assumes 166 days in the accrued interest period giving accrued interest of 1.959722 per £100 nominal and therefore a dirty price of 95.7097222. The 30/360 convention however, assumes 167 days in the accrued interest period generating accrued interest of 1.9715278 and therefore a dirty price of 95.7215278.

ACT/360 and ACT/365

Some corporate and supranational bonds use the ACT/360 or the ACT/365 convention. Just as in the ACT/ACT convention, the number of days on which interest is accrued is taken as the actual number of days between the previous coupon and the trade settlement date. However the interest period is always taken to be fixed number of days, 360 or 365, rather than the actual number of days in the coupon year.

ACT/365 Example: European Investment Bank supranational floating rate bond

ORB identifiers

Name: EUROPEAN INVESTMENT BANK FLTG RTE BDS 19/02/15
TIDM: 96ML
ISIN: XS0487944752

Coupon date: 19 February, 19 May, 19 August, 19 November
Annual Coupon: variable, reset quarterly based on 3 month Sterling Libor + 0.1%
Trade Date: 3 August 2010 (T+3 settlement on 6 August)
Clean Price: 99.98

Accrued Interest = $\frac{79 \text{ (period between 19 Feb 2010 and 6 Aug 2010)}}{365} \times 0.79594^*$
= 0.1722719

Dirty price = 100.1522719

*This rate was fixed on 19 May 2010 based on that day's 3 month Sterling Libor rate of 0.69594 + 0.1%. This coupon is reset quarterly on the coupon dates. Because the accrued interest calculation uses a full year in the denominator, the annual coupon rate is used and there is no need to divide the coupon rate by four to reflect the quarterly coupon.

Further Information

Details of the new electronic Order book for Retail Bonds are available on the London Stock Exchange web site at: www.londonstockexchange.com/bondsmadeeasy

If you would like to know more about trading bonds on the London Stock Exchange please contact your broker or email the ORB team at: bonds@londonstockexchange.com

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