




# VALID CALCULATION TYPES

15 November 2016

**Note:** This document may not necessarily include all valid calculation types. Please contact your sales representative if you have any questions.

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## 1: Notes and Bonds, Street Convention

- Standard yield formula used most commonly on US Treasuries, corporate securities, and Eurobonds.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Coupon amounts for standard coupon periods are calculated as coupon / coupon frequency \* face regardless of day count.
- For US domestic bonds settlement defaults to T+1 for US Treasuries and Agencies, T+3 for all others. European CDSR eligible securities, settled T+3 previous to Oct 6, 2014 and T+2 business days thereafter. Other individual securities will apply their own specific market convention.
- For Romanian Government bonds, ticker ROMGB, BXT allows users an option to apply invoice amounts rounded on a per bond basis.

## 2: When-Issued U.S. Treasuries

- Used for when-issued US Treasury notes/bonds issued without accrued interest (i.e., the Issue Date and Interest Accrual Dates match).
- Primary price/yield calculation is Auction Yield on ticketing functions. Auction Yield is the calculation used to calculate the price of a new Treasury note/bond from the winning auction yield. Auction Yield is same as the CD-Compound discount method

$$PV = \frac{CF_1}{1 + \frac{y}{100} * \frac{d_1}{b_1}} + \frac{CF_2}{\left(1 + \frac{y}{100} * \frac{d_1}{b_1}\right) * \left(1 + \frac{y}{100} * \frac{d_2}{b_2}\right)} \text{ etc ...}$$

Where:

CF = cash flow

y = yield in percentage form

d = days in the period using the applicable day count

b = day count basis using the applicable day count


## 5: Zero-Coupon Bonds that Calculate a Simple Discount Yield

- Used for Zero-Coupon bonds that are quoted on a discount to par basis.
- This is the convention used for US Treasury bills

## 6: Discounted Commercial Paper

- Used for Zero-Coupon bond commercial paper
- Primary valuation is on a discount to par basis.
- Defaults to T+0 settlement

## 7: CD/Interest at Maturity

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- Used for zero coupon bonds or bonds that pay all interest at maturity.
- Yields are calculated on simple interest basis.
- For bonds that pay interest at maturity the coupon rate is stated as an annual rate. The coupon value is accumulated over the period from issue to maturity
- For Philippine T-Bills, ticker RPTB or RPSSTB, net invoice amounts are adjusted by a withholding tax, which is calculated as  $(100 - \text{price}) * \text{tax rate} * \text{face} / 100$ . In order to apply this convention in PPCR, tickers, must be .RPGb or .RPSST.
- For bonds with currency ISK and country IC, tax rate for after tax yield defaults to 10 percent
- Settlement differs depending on conventions of the particular security.
- For compounded yields, see Calc Type 269.

## 8: Converts a Discount Rate into a Simple (MMKT) Yield

### 13: Street Convention Fixed

- Similar to calc type 1
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Coupon amounts for standard coupon periods are calculated as  $\text{coupon} / \text{coupon frequency} * \text{face}$  regardless of day count.
- Used for street convention securities with long first and/or short last coupon periods.
- Settlement defaults to T+1 for US Agencies, T+2 or T+3 for all others. However there may be individual securities that apply their own specific market convention.

### 17: Money Market Floaters

- Used for standard Money Market floating-rate notes created through PGM or MMPL
- Note these securities must have a floating coupon history page updated in order for the Yield Analysis function (YA) to function properly.
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.
- For securities with caps the future projected coupons will be calculated at the cap if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) exceeds the cap. For securities with floors the future projected coupons will be calculated at the floor if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) is below the floor. However, in both cases, the future periods will still be discounted

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at the current assumed rate plus discount margin, and the first period will still be discounted at the current index to next refix plus discount margin.

- Unlike Calc 21 there is no leap year adjustment factor in the discount formula for ACT/XX day accounts.
- For issues using day types of {xxx}/ACT, BLOOMBERG PROFESSIONAL® service uses a denominator of 366 when the current period ends in a leap year.
- For trade dates when the first coupon rate is not known, for standard length first periods future coupon rates are estimated as assumed rate +/- quoted margin. For odd first periods (long or short) future coupons are estimated as index to next +/- quoted margin. Note: the rate used to estimate future coupon rates needs to be the same rate used in discounting the cash flows in order for price to equal 100 when quoted margin equals discount margin on first settlement.
- BC5 <go> applies this calc.

## 21: Corporate Floaters

- Used for standard floating-rate notes.
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.
- For securities with caps the future projected coupons will be calculated at the cap if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) exceeds the cap. For securities with floors the future projected coupons will be calculated at the floor if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) is below the floor. However, in both cases, the future periods will still be discounted at the current assumed rate plus discount margin, and the first period will still be discounted at the current index to next refix plus discount margin.
- A leap year adjustment factor is applied to discount formula for ACT/XX day accounts.
- For issues using day types of {xxx}/ACT, BLOOMBERG PROFESSIONAL® service uses a denominator of 366 when the current period ends in a leap year.
- For trade dates when the first coupon rate is not known, for standard length first periods future coupon rates are estimated as assumed rate +/- quoted margin. For odd first periods (long or short) future coupons are estimated as index to next +/- quoted margin. Note: the rate used to estimate future coupon rates needs to be the same rate used in discounting the cash flows in order for price to equal 100 when quoted margin equals discount margin on first settlement.
- BC13 <go> applies this calc.

## 22: Certificates of Deposit

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- Used for fixed rate CDs that have a tenor length greater than one year and pay interest annually or more on a more frequent basis.
- Applies CD compounding yield convention.

$$PV = \frac{CF_1}{1 + \frac{y}{100} * \frac{d_1}{b_1}} + \frac{CF_2}{\left(1 + \frac{y}{100} * \frac{d_1}{b_1}\right) * \left(1 + \frac{y}{100} * \frac{d_2}{b_2}\right)} \text{ etc ...}$$

Where:

CF = cash flow

y = yield in percentage form

d = days in the period using the applicable day count

b = day count basis using the applicable day count

- Settlement is T+3.

## 23: Australian Government Bonds, 7-Day Ex-Dividend

- Used for Australian government and corporate issues that use the 7-day ex-dividend rule. However, it can be adjusted to accommodate other ex-dividend rules.
- Applies compound yields, compounding on the same frequency as the coupon frequency. However, when settlement occurs in the last period yields are calculated on a simple basis using an ACT/365 day count and if maturity falls on a non-business day it is bumped to the next business day when considering the ACT/365 period.
- Quotes are by yield with priced being either gross (dirty) or capital (clean).
- Prices are rounded to 3 decimals on except in the last period when they are not rounded.
- For trade dates prior to March 7, 2016 settlement is T+3 and T+2 on or after.
- Method of accrual:

$$AI = (\text{Days Elapsed/Days In Period}) * (\text{Coupon} / \text{Coupon Freq}) * 100$$

(Round to three decimals)

- AI per Face = AI \* (Face/100)
- Price formula in last period:  

$$(100 + \text{Periodic Coupon}) / (1 + (\text{Days Remaining to Maturity}/365) * \text{Annual Yield})$$

\*If maturity lands on a non-business day, count the days from settle to the bumped maturity date.

## 26: U.K. Domestic Notes and Bonds (Consortium Method)

- Used for the United Kingdom domestic government bonds (Gilts) and corporate bonds as well as Bulldog issues.
- Pays even S/A coupons. An ex-dividend schedule must be filled out.
- Gilts trigger next day settlement and go 7 business days ex-dividend.

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- Corporate issues settled T+3 previous to Oct 6, 2014 and T+2 business days after. Ex-dividend periods vary.

## 33: Mortgage Securities

- No longer in use
- Routed to the mortgage calc code.

## 34: Mortgage Securities

- No longer in use
- Routed to the mortgage calc code.

## 35: Term Debenture Bonds

- Used for issues which have no accrued interest for the first period or more and then step up to a fixed rate.

## 41: Perpetual Bonds

- Used for any issue that has no final maturity.
- Yield defaults to yield to worst. However, yield to maturity is calculated as current yield.

## 42: Perpetual Ex-Dividend Bonds

- Used for any issue that would normally use calc type 26 but has no final maturity.
- Yield to call is calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied. Yield to perpetuity is calculated using the formula for Undated Gilts provided by the UK DMO in the Formulae for Calculating Gilt Prices from Yields document. Yield to worst is the worst of yield to call or yield to perpetuity.
- Most, but not all, government bonds go 7 business days ex-dividend. Corporate bond ex-dividend periods vary.
- UK Gilts default to T+1 settlement, others T+2 settlement

## 44: Index-Linked Gilts and UK RPI Corporate Bonds with an Eight-Month Indexation Lag

- The coupon and redemption are inflation adjusted and linked to the UK RPI Index. (UKRPI Index). There is no deflation floor on either the coupon rate or the principal redemption, i.e., they can both fall below par in case of deflation.
- The default yield is "real yield" (not inflation adjusted).
- Quoted price includes the inflation adjustment. Therefore on a security that does not include a sinking fund total payment equals price + inflation adjusted accrued \* face. On sinking fund



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securities price includes the inflation adjustment, but excludes the principal factor. Therefore total payment equals price + inflation adjusted accrued \* current factor \* face.

- Gilts apply an 8 day ex-dividend period, corporate issues may vary.
- T+1 settlement.

## 46: Municipal Bonds


- Used for long-term fixed-rate municipal bonds that pay interest regularly.
- Applies MSRB accuracy & truncation rules
- No adjustment is made for long/short first/last coupon periods per MSRB's G33 rule
- Used for most zero coupon bonds that compound interest regularly
- Used for some adjustable coupon bonds that are in a fixed-rate mode currently

## 48: Canadian Bonds

- Used for Canadian government and corporate issues.
- Yields are compounded on the same frequency as the coupon frequency using an ACT/ACT day count, except in the last period.
- For settlement in the last period, or in the last year for zero coupons, simple yield is applied using an ACT/365 day count. For discounting purposes maturity is adjusted to the next business day if the original maturity falls on a non-business day. However, the actual date appearing on DES and calc route will remain the unadjusted date.
- Standard period coupon payments are calculated as coupon / coupon frequency \* face. Odd periods are calculated on an ACT/365 basis.
- Partial period accrued for invoicing is calculated on an ACT/365 basis. For most settlement scenarios accrued is calculated as (number of days from previous coupon to settlement) / (365 / coupon frequency) \* (coupon / coupon frequency) \* face. However for scenarios where accrued days is greater than (365 / coupon frequency) accrued is calculated as (1-(days from settle to next coupon payment) / (365 / coupon frequency)) \* (coupon / coupon frequency) \* face
- Note that an Act/Act day count is applied to accrued used in the discount formula to derive clean price
- For sinking fund bonds, workout flag defaults to principal weighted average life. This provides the same price/yield calculation as average life to par, meaning interest and principal cash flows are discounted to the dates they are received. However the average life date is derived as the weighted average time to receipt all principal cash flows
- See Calc Type 197 for further information regarding government issues.

## 49: USD Convertible Bonds

- Uses the same calculations as Calc Type 1, but handles the convertible components.

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## 51: Japanese Government Bonds

- Regular or short last coupons - Simple (ticker: JGB)
- Used for Japanese Government Bonds which have either a normal or a short last coupon period.
- JGBs issued prior to March 1, 2001 include both start and end dates for the first coupon period.
- Bonds issued after March 1, 2001 have a full semi-annual coupon payment at the first coupon date regardless of the issue date. The interest accrued period always starts six months prior to the first coupon payment date.
- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- Short first coupons are calculated using the BOJ formula of  $\text{face} * \text{annual coupon} / \text{coupon frequency} * (1 / \text{coupon frequency} - (\text{days in a standard period} - \text{days in short period}) / (365 / \text{coupon frequency}))$ . These types of securities are issued to retail investors.
- Simple and compound yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls on 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after.
- Prior to November 2015 coupon payments applied a five business days trade suspension period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen

- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 52: Japanese Government Strips and When Issued Japanese Government Bonds

- Used for Japanese Strip Bonds and When Issued Japanese Government Bonds. Yield is calculated on a semi-annual compound basis.
- Short first coupons are calculated using the BOJ formula of  $\text{face} * \text{annual coupon} / \text{coupon frequency} * (1 / \text{coupon frequency} - (\text{days in a standard period} - \text{days in short period}) / (365 / \text{coupon frequency}))$ . These types of securities are issued to retail investors.
- Yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls on 2/29 and time to maturity is greater than one



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- calendar year, then it needs to be excluded as a day.
- For STRIPS, simple yield is applied when time to maturity is less than six months.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after.
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.

## 54: Japanese Discount Bonds (No Bills)

- No Longer in Use
- Used for Japanese government long term zero coupon bonds (ticker: JDGB). Price and yield calculation includes only one end.
- Yield calculation includes February 29 only if there is less than one year to maturity.
- Compound Yield.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 56: Preferred Stock - \$ Type

- Used for preferred issues that quote dividend values in U.S. dollars.
- May only be used for issues that have had the first ex-dividend period updated.
- For issues prior to the first ex-dividend period, see calc type 205.

## 57: Preferred Stock - % Type

- Used for preferred issues that quote dividend values as a percent.
- May only be used for issues that have had the first ex-dividend period updated.
- For issues prior to the first ex-dividend period, use calc type 206.

## 59: Partly Paid Eurobonds

- Used for any type of issue that uses calc type 1 and is purchased in installments.
- Accrued interest is calculated during the partly paid period based on the percentage paid and the period of time between the installments. An installment record page is required.

## 60: German Fixed Rate Bonds (ISMA Method)

- Used for German government agency and corporate issues.
- Yields are compounded on the same frequency as the coupon frequency.
- Displays Moosmuller yield equivalent on YA. See Calc 228 for Moosmuller yield description.

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- This calc is similar calc type 228 except primary yield for 228 is Moosmuller yield.
- Prior to 1994 coupons payments applied ex-dividend dates falling on the 18th of the month of the coupon payment.
- As of Oct 6, 2014 settlement is T+2.

## 71: Austrian Fixed Rate Bonds (ISMA Method)

- Used for Austrian government and corporate issues.
- Yields compound on the same frequency as the coupon frequency, and continue to compound in the last period
- No longer triggers an ex-dividend period prior to coupon payment.
- Calc Type 71 is identical to Calc Type 129 (ISMA Convention), except that Calc Type 71 distinguishes domestic bonds from international bonds.

## 77: Par/Pro-Rata Sinking Fund

- Used for securities that apply a standard yield formula with pro-rata sinking funds.
- Yields on the functions YA, BXT, CSHF ALLQ are calculated on a yield to average life at par basis meaning that sink amounts are redeemed at par or a predetermined price, as opposed to market price, and present valued to the dates they are paid.
- On the function SF yield to average life at par is denoted as Mandatory Sink to Maturity
- Coupon amounts for standard coupon periods are calculated as coupon / coupon frequency \* face regardless of day count. However, there are cases, where the payment dates and amounts may be bumped and adjusted according to business days. Pay dates and amounts can be viewed on CSHF.
- Face amount on CSHF and the resulting cash flows are already adjusted to the current factor. So to see the amounts on a nominal basis update the face amount field to nominal face \* current factor.
- This calc can also be applied to securities where a singular non-par sink price is applied to all sink amounts.
- Settlement defaults to T+1 for US Treasuries and Agencies, T+3 for all others. However there may be individual securities that apply their own specific market convention

## 89: French Fixed Rate Bonds

- Used for French OATs and corporate bonds issued on or after January 1, 1987.
- Accrued was rounded to three decimals on 100 face for all settlements before April 18th, 2005, and is rounded to seven decimals on 100 face for all settlements on or after this date.
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior date.
- Accrued Calculations:

$$\text{Accrued days} / \text{days in period} * \text{rate} / \text{coupon frequency} * 100 = X$$

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Round X to 7 decimals.  
 $\text{Trade Amount}/100 * X = \text{cash value}$

## 99: Special NO CALCULATION Calc Type for Fixed Rate Bonds

- Does not provide any calculations.
- For the Loans product, applies to fixed rate revolvers, fixed rate synthetic letters of credit, and all inactive loans

## 101: U.S. Government When Issued Yield

- Used for US government when issued securities that are issued with accrued interest
- Primary yield convention is U.S. Treasury WI auction yield (CD compounding)
- Prices are rounded to 6 decimals

## 102: Street Convention

- Used for US government post auction securities that are issued with accrued interest
- Primary yield convention is S/A compounding, for all periods except the last period. In the last period simple yield is applied.
- Settlement is T+1

## 103: Floating Rate Preferred Stock - \$ Type

- Used for adjustable/floating-rate preferreds where the dividend is quoted in dollars.
- Must be accompanied by a floating coupon history page.
- For issues denominated in Euro, see calc type 876.

## 104: Floating Rate Preferred Stock - % Type


- Used for adjustable/floating-rate preferreds, where the dividend is quoted in percent.
- Must be accompanied by a floating coupon history page.
- For issues denominated in Euro, see calc type 878.

## 108: French Discount T-Bills - Price/CD-Yield

- Used for the French government short term securities under ticker symbol BTF.
- Applies Simple Yield.
- Similar to calc type 7, but displays APY equivalent using ACT/360 on YA.
- Settlement defaults to T+2

## 111: Pay-In-Kind (Piks)

- Used for calc type 1 issues that can pay their interest in either cash or additional bonds.

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- Called PIKs in the U.S. market and Bunny Bonds in the Eurobond market.

## 113: Czech Domestic Bonds

- Used for Czech domestic government and corporate fixed-rate bonds.
- Trades using a 30-day ex-dividend period and ISMA conventions.

## 119: Belgian Government Bonds

- Incorporates a withholding tax and a day type change. Bonds issued prior to March 1, 1990 have a 25% withholding tax.
- After March 1, 1990, the withholding tax is 10%.
- These bonds also calculate interest based on an ACT/360 day type if their current time to maturity is 1 year or less.

## 125: Fixed Price-Type Warrants (Sfr/Yen/DM Warrants)

- Used for any type of warrant that is stripped of a bond and quoted on a cash value basis.
- Typically they are Swiss franc/Yen/DM warrants. Also used for any warrant that buys common stock.


## 126: Percent Type Warrants - (U.S.\$/Yen/ECU Warrants)

- Used for any type of warrant that is stripped of a bond and quoted on a percentage value basis.
- Typically they are U.S. dollar/Yen/ECU warrants.

## 127: Japanese Government Treasury Discount Bills (Ticker: JTDB)

- Used for Japanese zero coupon government bills. Price calculation based on discount rate includes both start and end dates while yield calculation based on price includes only end date.
- Yields are on calculated a simple yield convention and truncated to four decimals.
- Prices are truncated to four decimal.
- Applies an ACT/365 day count
- Prior to November 2015 principal payments applied a five business days trade suspension period.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 129: ISMA Convention

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- Used for the French government BTAN securities and all Swiss domestic government, corporate, and municipal securities.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods.
- For French government BTAN securities accrued is rounded to 7 decimals on 100 par

## 130: Defaulted Bonds

- Similar to calc type 1
- Used for fixed-rate bonds that are currently in default.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency.
- Discount formula assumes next cash flow is not being paid but all subsequent payments are.
- No accrued, similar to calc type 1.
- Allows settlement past stated maturity
- Settlement defaults to T+3. However there may be individual securities that apply their own specific market convention.

## 133: Multi-Coupon Bonds

- Used for any street convention multi-coupon bonds that have up to seven fixed coupon rates for the life of the bond. Limited to 120 cash flows
- Cash flow dates and amounts are unadjusted. Coupon payments are derived by coupon rate /frequency.
- Cash flows are not adjusted for good business days and coupon payments are derived by coupon rate /frequency.
- Yields are calculated on a compounded basis using the coupon frequency for all periods except the last period. In the final period before maturity, simple yield is applied.
- When used with day count 30/360, accrued interest is calculated using SIA 30/360 methodology.
- When used with day count ISMA-30/360, accrued interest is calculated using ICMA (ISMA) 30/360 methodology.
- When used with day count ACT/ACT, accrued interest is calculated using ICMA (ISMA) ACT/ACT methodology (US treasury note/bond methodology).
- When the day count is ACT/360 or Act/365, the discount periods in the price/yield formula are calculated using this day count.

## 135: Italian BTEs - 12.5% Withholding Tax

- Used for the Italian government short term ECU securities issued after Sept. 1, 1987.
- This calc type uses a 12.5% withholding tax rate to calculate yields and accrue interest.
- Triggers a 2-day settlement.

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## 144: New Zealand Government Bonds

- Used for New Zealand government and corporate issues.
- Applies compound yield calculation, except simple yield in the last period.
- Compounding frequency equals coupon frequency.
- Nine calendar day ex-dividend conventions.
- T+2 settlement.

## 147: New South Wales Treasury Corp., Ex-Dividend Australians

- These bonds have the same rounding convention used for Australian ex-dividend bonds (calc type 23).

## 150: Swedish Government Bonds, 15-Days Ex-Dividend

- Used for Swedish government and corporate issues.
- Goes ex-dividend 15 calendar days prior.

## 153: Swedish Government Bonds, 5-Days Ex-Dividend

- Used for Swedish government and corporate issues.
- Goes ex-dividend 5 calendar days prior.

## 164: Municipal Notes

- Used for most fixed-rate municipal short term notes, that pay interest only at maturity
- Applies MSRB accuracy & truncation rules
- See MSRB's G33 rule

## 175: Australian Index-Linked, 7-Days Ex-Dividend

- Used for government and corporate bonds where the coupon and redemption value is inflation adjusted and linked to Australian average change in quarter on quarter CPI (ACIF Index).
- Government bonds are adjusted on a change in CPI over the 2 quarters previous to the coupon period start date,  $(CPI_t / CPI_{t-2/2}) * Kt-1$ . Corporate bonds can apply the same methodology or can be adjusted on a 1 quarter basis,  $(CPI_t / CPI_{t-1}) * Kt-1$ , where  $Kt-1$  equals the nominal principal value as of the previous payment date
- Principal is deflation protected.
- Price is clean but also includes inflation and is rounded to 3 decimals. Therefore total payment equals  $(price + accrued) * face$ .



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- For government bonds price is rounded to 3 decimals, except in the last period where it is not rounded.
- Yields compound on a quarterly basis and are rounded to 2.
- For trade dates prior to March 7, 2016 settlement is T+3 and T+2 on or after.
- Method of accrual:  

$$AI = (\text{Days Elapsed} / \text{Days In Period}) * (\text{Coupon} / \text{Coupon Freq}) * \text{Current Index Factor} * 100$$
- (Round to three decimals)
- $AI \text{ per Face} = AI * (\text{Face} / 100)$
- On October 24, 2012 the CPI value used to calculate the inflation adjustment on these securities was rebased. For coupon periods that begin on or after October 24, 2012, inflation values will be calculated using the new base. These values can be found on AUCPI Index. Coupon periods that span October 24, 2012 or periods previous to that period apply the old base found on AUCPI90 Index. This convention is in accordance with AOFM and AFMA instructions.

## 177: Italian Bots - No Longer Used

- See calc type 527.

## 180: Spanish Domestic Bonds (Conventional Method - Annual Yield)

- Used for Spanish domestic fixed rate corporate bonds.
- This calc type does not calculate yield to maturity equal to true yield if the maturity date falls on a weekend. Accrued interest is calculated ACT/ACT.
- Before 9/17/98. The day count was ACT/365 for yields and ACT/ACT for accrued interest.
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior dates

## 183: Norway Fixed

- Used for Norwegian government and corporate issues
- Yields are compound on an annual basis
- For coupon payment dates prior to April 2 2015 14 calendar ex-dividend applies. After that 1 business day applies.
- Settlement was T+3 previous to Oct 6, 2014, T+2 business days after

## 186: Irish Gilts (ISMA Method)

- Used for Irish government and corporate issues.
- A coupon/ex-dividend history page must be filled out to trigger the proper ex-dividend period.
- Settlement defaults to T+1

## 190: Moosmuller Method

- Used for German zero coupon and fixed rate bonds that apply Moosmuller yield convention

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- Yield is calculated by discounting each future cash flow subsequent to the next payment (or compounding date) to the next payment (or compounding) date on an annual compound basis. Then discounting the sum of those present values plus the cash flow on the next payment date to settlement on a simple yield basis.
- Settlement defaults to T+3

## 192: U.K. Preference Shares (ISMA Method)

- Used for U.K. preference shares.
- Primary valuation is yield to worst.
- Trade amounts on most securities are expressed in pence.
- Dividends are calculated on a gross amount.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after

## 195: New Zealand Index-Linked

- Used for government and corporate bonds where the coupon and redemption value is inflation adjusted and linked to New Zealand CPI.
- Coupon and principal are adjusted on the change in CPI the 2 quarters previous to the coupon period start date,  $(CPI_t / CPI_{t-2/2}) * Kt - 1$ .
- Price includes inflation and accrued, therefore total payment equals price \* face.
- Yields compound on a quarterly basis, except simple yield in the last period.
- Settlement defaults to T+2.

## 197: Bank of Canada Method

- Used for Canadian government bonds.
- These issues use the Bank of Canada convention which is the same as Calc Type 48.
- Yields are compounded on the same frequency as the coupon frequency using an ACT/ACT day count, except in the last period where simple interest is applied using an ACT/365 day count
- In the last period, or in the last year for zero coupons, simple interest is applied using an ACT/365 day count. For discounting purposes maturity is adjusted to the next business day if the original maturity falls on a non-business day.
- Standard period coupon payments are calculated as coupon / coupon frequency \* face. Odd periods are calculated on an ACT/365 basis.
- Partial period accrued for invoicing is calculated on an ACT/365 basis. For most settlement scenarios accrued is calculated as (number of days from previous coupon to settlement) / (365 / coupon frequency) \* (coupon / coupon frequency) \* face. However for scenarios where accrued days is greater than (365 / coupon frequency) accrued is calculated as  $(1 - (\text{days from settle to next coupon payment} / (365 / \text{coupon frequency}))) * (\text{coupon} / \text{coupon frequency}) * \text{face}$ .

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- Note that accrued applied in the discount formula to derive clean price applies and Act/Act day count
- When a bond has only one coupon remaining to be paid, the Bank of Canada convention is used to calculate the yield on a simple interest basis over the fractional semi-annual period remaining to maturity on an ACT/365 basis. However, the US government equivalent bases the yield on an ACT/ACT basis and a semi-annual period. Therefore, the price of a bond with "T" days remaining to maturity to yield "Y" is:

$$P = (100 + C/2)/(1 + Y*T/(day\ type)) - A$$

## 198: Special NO CALCULATIONS Calc Type for Frns

- Does nothing.

## 199: Special NO CALCULATIONS Calc Type for Warrants

- Does nothing.

## 201: Swedish Government Bonds, 10-Days Ex-Dividend

- Used for Swedish government and corporate issues that use a 10 calendar day ex-dividend period.

## 204: Special No Calculations for ARPS

- Used for U.S. and Canadian auction rate preferreds.
- There are no analytics for these securities.

## 205: New Issue Preferred Stock - \$ Type

- Used for preferred issues where the dividend is quoted in U.S. dollars.
- May only be used for new issues that do not have the first ex-dividend period updated.
- For issues after the first ex-dividend period, see calc type 56.
- For issues denominated in Euro, see calc type 872.

## 206: New Issue Preferred Stock - % Type

- Used for preferred issues that quote the dividend in percent.
- May only be used for new issues that do not have the first ex-dividend period updated.
- For issues after the first ex-dividend period, see calc type 57.
- For issues denominated in Euro, see calc type 873.

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## 212: % Pik Preferred

- Used for preferred pay-in-kind issues that quote the dividend in percent.
- Must have PIK start and end dates.
- Ex-dividend and current pay dates are maintained in the notes.

## 216: Special Canadian Accrued (ACT/365 & ACT/366)

- Used for any Canadian issue that uses split day counts during one coupon period.
- Uses ACT/365 during non-leap years and ACT/366 during leap years.

## 219: German Schuldscheindarlehen

- Only used in PPCR for German Schuldscheindarlehen securities.
- Current period cashflow is calculated from current settlement date to next pay date.
- Yield convention is Moosmuller yield also known as CD Compounding.
- Accrued is not applicable as next cashflow amount is calculated from settlement. However, YA allows users to apply accrued. When this option is selected price is considered clean and yields are calculated assuming the next coupon cash flow is amount is calculated from the previous coupon date.

## 223: German Schuldscheindarlehen/Isma

- Only used in PPCR for German Schuldscheindarlehen securities
- Current period cashflow is calculated from current settlement date to next pay date.
- Yield convention is compound changing to simple in the last period.
- Accrued is not applicable as next cashflow amount is calculated from settlement. However, YA allows users to apply accrued. When this option is selected price is considered clean and yields are calculated assuming the next coupon cash flow is amount is calculated from the previous coupon date.

## 227: US Treasury Floater

- Used for US Treasury floaters linked to the US 3 month T-bill high discount rate converted to an Act/360 money market yield. This value is represented on the Bloomberg terminal by ticker USBMMY3M Index
- Primary valuation is discount margin to price. The formula can be found at <http://www.treasurydirect.gov/instit/statreg/auctreg/2013-18178.pdf>
- Price and accrued is rounded to 6 decimals during the WI period, 9 decimals after that point
- Assumed rate defaults to the effective rate for the corresponding settlement date from ticker USBMMY3M Index. This rate will be used in determining the discount rate in the price/DM calculation as well as the projection of cash flows for any unknown periods.
- The effective period for any 3 month T-bill auction rate is typically one calendar date from that auction up to and including the subsequent auction date. However, this is subject to a 2 business day lockout that occurs around issue dates, coupon payment dates, and re-opening

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issue dates. If the calendar date following the auction lands within two business days of a coupon payment date, issue date or a reopening issue date, then the previous auction rate is applicable up to and including that corresponding issue date, coupon payment date or reopening issue date. The latest 3 month T-bill auction rate will then be effective from one calendar day past the corresponding issue date / coupon payment date or re-opening issue date up to and including the next auction date.

- Settlement is T+1

## 228: German Corporates/Moosmueller

- Used for DEM denominated German corporate bonds, which were typically Kommunalobligationen & Pfandbriefe.
- Primary yield is Moosmueller yield, also known as CD Compounding where present value for next cash flow is:

$CF / (1 + \text{yield} * \text{days in period} / \text{day count basis})$  and subsequent present values are  $CF / ((1 + \text{yield} * \text{days in period} / \text{day basis} * (1 / \text{yield} * \text{days in previous period} / \text{previous period day basis}), \text{etc...})$ .

This calc is similar to calc type 60 except that primary yield for calc 60 is compound yield.

- Triggers a two-day settlement.

## 233: Italian CCT

- Used for the Italian government and corporate floating-rate notes. Uses the appropriate tax rate for yield and accrued calculations.
- Yield convention is annual compounding, and bumps cash flows off of non-business day on a modified following basis.
- Previous to redenomination accrued calculations included an extra day of interest.
- YA <Go> and BXT <Go> allow for calculations of gross or net tax. BXT also allows you to override the tax rate.
- This calc also supports Euro AFB day count (an accrued basis of 365 days when the coupon period does not include February 29th, and an accrued basis of 366 days when February 29th is included).
- Accrued interest is rounded to five decimals on government bonds, but can vary on corporate bonds.
- Sensitivity numbers are calculated to the next reset date.
- Note: YA provides an option to toggle between duration to the next reset date and duration to maturity.
- Settlement was T+3 previous to Oct 6, 2014, T+2 business days on or after

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## 235: Japanese Government Bonds - Long Last Coupons (Ticker: JGB)

- Used for Japanese government bonds that have a long last coupon period.
- JGBs issued prior to March 1, 2001 include both start and end dates for the first coupon period.
- Bonds issued after March 1, 2001 have a full semi-annual coupon payment at the first coupon date regardless of the issue date.
- The interest accrued period always starts six months prior to the first coupon payment date. Simple Yield.
- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- Accrued includes February 29 while simple yield does not unless settled on February 29 or if there is less than one year to maturity.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after
- Prior to November 2015 coupon payments applied a five business days trade suspension period.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen

- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 238: Japanese Convertible Bonds - Regular or Short Last Coupons - Simple

- Used for Japanese convertible bonds with either a normal or a short last coupon period. Simple Yield.
- Accrued includes February 29 while simple yield does not unless settled on February 29 or if there is less than one year to maturity.
- When a coupon date falls on non-business day, payment will be made previous business day with no amount adjustment. CSHF will show adjusted dates. In this case, BXT will show zero accrued between the previous business date and the coupon date.
- Settlement is T+3.
- There is a three-week trade suspension period prior to each coupon payment.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$



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Accrued Interest:  $(\text{Face}/100) \times X$ , truncate decimals to 1 yen

- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 241: Japanese Convertible Bonds - Long Last Coupons

- Used for Japanese convertible bonds with a long last coupon period.
- Simple yield.
- Accrued includes February 29 while simple yield does not unless settled on February 29 or if there is less than one year to maturity.
- When a coupon date falls on non-business day, payment will be made previous business day with no amount adjustment. CSHF will show adjusted dates. In this case, BXT will show zero accrued between the previous business date and the coupon date.
- Settlement is T+3.
- There is a three-week trade suspension period prior to each coupon payment.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $(\text{Face}/100) \times X$ , truncate decimals to 1 yen

- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 269: Coupon Rate Paid at Maturity

- Used for zero coupon bonds or bonds that pay all interest at maturity.
- Yields are calculated on annual compound basis.
- For bonds that pay interest at maturity the coupon rate is stated as be the real rate paid, not the annualized rate
- Settlement differs depending on conventions of the particular security.
- For simple yield, see Calc Type 7.

## 273: Norwegian Government Treasury Bills

- Used for Norwegian government Treasury bills.
- Yields are calculated on annual compound basis.
- Price is rounded to 4 decimals

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- No ex-dividend convention.
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior dates.

## 276: Corporate IO (Interest Only) - Redemption Value = 0

- Used for any calc type 1 issue that pays only interest payments.
- The principal redemption value equals zero.

## 280: Corporate PO (Principal Only) Coupon = 0

- Used for calc type 1 issues that only pay principal, no coupon payments.
- Also used for Dutch domestic Sparbrieven (savings bond) issues.

## 284: Australian\$ Global Bonds

- Used for FNMA (Fannie Mae) Australian dollar Global bonds.
- Goes 1-day ex-dividend.

## 287: Medium Term CD APY (annual percentage yield)

- Used for medium-term zero coupon CD's.
- Calculates an annualized rate of return on a lump sum cash flow to be received >1yr.
- Should be used for zero coupon CD's with more than one year to maturity that quote their yields on an annual compound basis.

$$CD\ APY = \left( \frac{FV}{PV} \right)^{\frac{1}{DCF/Basis}} - 1$$

## 292: Canadian Multi-Coupon Bonds

- Used for Canadian bonds with more than one, but less than seven, coupon steps throughout the life of the bond.
- All other conventions are same as calc 48.
- Yields are compounded on the same frequency as the coupon frequency using an ACT/ACT day count, except in the last period.
- For settlement in the last period, simple yield is applied using an ACT/365 day count. For discounting purposes maturity is adjusted to the next business day if the original maturity falls on a non-business day.
- Standard period coupon payments are calculated as coupon / coupon frequency \* face. Odd periods are calculated on an ACT/365 basis.
- Partial period accrued for invoicing is calculated on an ACT/365 basis. For most settlement scenarios accrued is calculated as (number of days from previous coupon to settlement) / (365 / coupon frequency) \* (coupon / coupon frequency) \* face. However for scenarios where

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accrued days is greater than  $(365 / \text{coupon frequency})$  accrued is calculated as  $(1 - (\text{days from settle to next coupon payment} / (365 / \text{coupon frequency}))) * (\text{coupon} / \text{coupon frequency}) * \text{face}$

- Note that an Act/Act day count is applied to accrued used in the discount formula to derive clean price
- For sinking fund bonds, workout flag defaults to principal weighted average life. This provides the same price/yield calculation as average life to par, meaning interest and principal cash flows are discounted to the dates they are received. However the average life date is derived as the weighted average time to receipt all principal cash flows

## 299: Yen Global Bonds: Extra Day at End of 1st Coupon (Simple)

- Used for global bonds that trade during the first coupon period using the Eurobond accrual method.
- These issues pay an extra day like the calc type 51 issues, but are calculated on the first pay date only.

## 300: Yen Global Bonds: Extra Day at the End of 1st Coupon (Compound)

- Used for Yen global bonds that trade during the first coupon period using the accrual method.
- These issues pay an extra day, like the calc type 52 issues, but are calculated on the first pay date only.

## 303: Inverse Floating Rate Notes: Checks Leap Year off End Date

- Used for floaters that have rates based on a fixed-rate less a benchmark.
- For issues using day counts of  $\{XX\}/\text{ACT}$ , Bloomberg uses the denominator of 366 when the current period ends in a leap year.
- Requires a floating coupon history page.

## 305: Inverse FRN: Checks Leap Year off Start Date

- Used for floaters that have rates based on a fixed rate less a benchmark.
- For issues using day counts of  $\{XX\}/\text{ACT}$ , Bloomberg uses the denominator of 366 when the current period begins in a leap year.
- Requires a floating coupon history page.

## 311: Australian Government Bonds, 14-Days Ex-Dividend

- Used for Australian government and corporate issues that use the 14-day ex-dividend rule.
- Accrued interest is the unique characteristic with this calc type.
- Triggers T+3 day settlement.

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## 314: Australian Index-Linked

- Same as calc type 175 but goes 14 days ex-dividend.
- Used for Australian government issues that have the coupon payment linked to the CPI.
- Requires an EFUP2 page.
- Triggers next day settlement.

## 317: Mexican Cetes RV = 10 (Price/CD Yield)

- Used for Mexican Treasury bills.
- Similar to calc type 7 except the redemption value defaults to 10, not 100.
- Yields are calculated on simple interest basis.
- T+2 settlement for Cetes, ticker MCET Govt, and T+0 settlement for government strips, tickers MBONOS and MBONAR

## 320: Multi-Coupon Special Bonds

- Used for any calc type 1 issue that has odd coupon payment periods, such as 3 months or 9 months.
- Allows for more than one coupon rate for the life of the bond.

## 324: Japanese Regular Bonds - Regular or Short Last Coupons - Simple

- Used for Japanese bonds (excluding government and convertible bonds) that have either a normal or a short last coupon period (ACT/ACT).
- Simple and compound yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- When a coupon date falls on non-business day, payment will be made previous business day with no amount adjustment. CSHF will show adjusted dates. In this case, BXT will show zero accrued between the previous business date and the coupon date.
- Settlement is T+3.
- For sinking fund bonds yields are calculated on a compound basis to the longest average life workout date
- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

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$$100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen

- For settlements that occur in a coupon period prior to periods that include January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.
- Calculates odd coupon amounts differently between bank debentures and non-bank debentures. Securities with collateral type (DS119 COLLAT\_TYP) DEBENTURES issued by one of the following banks are considered bank debentures.
  - Aozora Bank (Ticker NIPPBK)
  - Norinchukin Bank (Ticker NORBK)
  - Shinkin Central Bank (ZESHBK)
  - Shinsei Bank (Ticker SHNBK)
  - Shokochukin Bank (Ticker SHOCHU)

- Odd Coupon Calculations:  $F = \text{Face}$ ,  $C = \text{Coupon}$

--Short First =  $F * C / \text{Coupon frequency} * A/B$

Where  $A = \#$  days from issue date to first coupon date

Where  $B = \#$  days from one half year prior to first coupon date to the first coupon date

For bank debentures,  $F * C * A/365$

--Long First =  $F * C / \text{Coupon frequency} + (A/B * F * C / \text{Coupon frequency})$

Where  $A = \#$  days from issue date to half year prior to first coupon date.

Where  $B = \#$  days from one year prior to first coupon date to one half year prior to the first coupon date.

For bank debentures,  $F * C * (A/365 + .5)$

--Short Last =  $F * C / \text{Coupon frequency} * A/B$

Where  $A = \#$  days from a day from the penultimate coupon date to maturity.

Where  $B = \#$  days from penultimate coupon date to one half year after that date

For bank debentures,  $F * C * A/365$

## 325: Japanese Regular Bonds - Regular or Short Last Coupons - Compound

- Same as the above 324, but compound yield.
- Currently not used.

# Bloomberg

## 327: Japanese Regular Bonds - Long Last Coupons - Simple

- Used for Japanese bonds (excluding government and convertible bonds) which have a long last coupon period (ACT/ACT).
- Simple and compound yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- When a coupon date falls on non-business day, payment will be made previous business day with no amount adjustment. CSHF will show adjusted dates. In this case, BXT will show zero accrued between the previous business date and the coupon date.
- Settlement is T+3.
- For sinking fund bonds yields are calculated on a compound basis to the longest average life workout date
- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.

- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen

- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.
- Calculates odd coupon amounts differently between bank debentures and non-bank debentures. Securities with collateral type (DS119 COLLAT\_TYP) DEBENTURES issued by one of the following banks are considered bank debentures.
  - Aozora Bank (Ticker NIPPBK)
  - Norinchukin Bank (Ticker NORBK)
  - Shinkin Central Bank (ZESHBK)
  - Shinsei Bank (Ticker SHNBK)
  - Shokochukin Bank (Ticker SHOCHU)
- Odd Coupon Calculations:  $F = \text{Face}$ ,  $C = \text{Coupon}$   
 --Short First =  $F * C / \text{Coupon frequency} * A / B$   
 Where  $A = \# \text{ days from issue date to first coupon date}$   
 Where  $B = \# \text{ days from one half year prior to first coupon date to the first coupon date}$   
 For bank debentures,  $F * C * A / 365$



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--Long First =  $F * C / \text{Coupon frequency} + (A/B * F * C / \text{Coupon frequency})$

Where A = # days from issue date to half year prior to first coupon date.

Where B = # days from one year prior to first coupon date to one half year prior to the first coupon date.

For bank debentures,  $F * C * (A/365 + .5)$

--Short Last =  $F * C / \text{Coupon frequency} * A/B$

Where A = # days from a day from the penultimate coupon date to maturity.

Where B = # days from penultimate coupon date to one half year after that date

For bank debentures,  $F * C * A/365$

--Long Last =  $F * C / \text{Coupon frequency} + (A/B * F * C / \text{Coupon frequency})$

Where A = # days from one half year after penultimate coupon date to maturity.

Where B = # days from one half year after penultimate coupon date to one year after the penultimate coupon date. No long last for bank debentures.

## 328: Japanese Regular Bonds - Long Last Coupons - Compound

- Same as calc type 327, but compound yield.
- Currently not used.

## 334: French BTANs - ECU

- Used for French government 2- and 5-year issues denominated in ECU.

## 335: Portuguese Domestic Bonds

- Used for Portuguese fixed rate domestic issues.
- Primary yield is calculated on a compounding basis using the same frequency as the coupon frequency for all periods including last period.
- YA displays equivalent yields net of tax and commission.
- YA invoice allows users to apply commission and tax on accrued.
- For settlements before 4/1/94 users can apply accrued dates that are different from the settlement date.
- Settlement was T+3 previous to Oct 6, 2014, T+2 business days on or after.

## 343: Special Issue Canadian

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- Used for calc type 48 issues that are issued with the settlement date prior to the interest accrual date.
- These bonds trade without accrued for a few days
- See calc type 411 for reopenings.

## 347: Special German ACT/360 Bundesbank

- No longer in use.

## 348: Hong Kong Domestic Bonds

- Used for Hong Kong government and corporate bonds
- Government bonds (HKGB Govt & GBHK Govt), apply a T+1 day settlement. See COVR <Go> to override settle to T+0 before 11am HK time.
- Street Convention yields (primary yield) are compounded on an annual basis regardless of coupon frequency.
- Day count for coupon amount, accrued interest and discount period calculation is typically ACT/365.
- YA displays periodic equivalent yield corresponding to coupon frequency
- Cash flow dates are bumped on a modified following business day basis and bumped to the previous business day if the next business day falls on the next month. Cash flow amounts are adjusted accordingly.

## 352: Hong Kong T-Bills

- Used for the Hong Kong Treasury bills. Applies simple yield calculations
- Triggers T+1 settlement. See COVR <Go> to override settle to T+0 before 11:00 a.m. HK time.

## 356: Greek Government Bonds

- Used for fixed-rate Greek government bonds. Uses an International Securities Market Association (ISMA) 30/360 method to calculate accrued for securities issued prior to January 1, 2001.
- Uses ACT/ACT day count to calculate accrued for securities issued after January 1, 2001.
- Settlement was T+3 previous to Oct 6, 2014, T+2 business days on or after.

## 359: Greek Government Bonds

- No longer in use
- Used for Greek government issues.
- Allows users to enter any day type they choose.
- Triggers a 2-day settlement.

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## 360: Sweden Government Bonds

- No longer in use.
- Accrued applies 4 business ex-dividend convention.

## 364: Sweden Government

- Used for Swedish government and corporate issues.
- Yields compounded on the same frequency as the coupon frequency.
- Price is rounded to 3 decimals.
- Accrued applies a four business ex-dividend convention.

## 368: South African Government Bonds

- Used for the South African government and corporate issues
- Quotes both clean and dirty prices rounded to 5 decimals
- Yields are rounded to 5 decimals and calculated on a compounded basis on the same frequency as the coupon frequency using an ICMA Act/act day count for all periods except the last period. In the last period yield is calculated on a simple basis using an Act/365 day count.
- Standard period cash flows are calculated as coupon / coupon frequency \* face.
- Broken periods are calculated on an ACT/365 basis. Meaning short coupon period cash flows are calculated as days in period / 365 \* coupon \* face. Long first periods are calculated as ((days from settle to quasi first coupon date) / (365/ coupon frequency) + 1) \* (coupon / coupon frequency) \* face.
- Accrued interest is calculated on an ACT/365 basis and rounded to 5 decimal places on 100 basis.
- Invoice values are calculated as follows
  - Total payment is calculated as follows (Clean price rounded to 5 + Accrued interest on 100 basis rounded to 5) = dirty price rounded to 5. Dirty price/100 \* face amount rounded to 2 = total payment
  - Total accrued interest = Accrued interest on 100 basis rounded to 5 \* face/100, then rounded to 2
  - Principal amount = Total payment rounded to 2 – Total accrued interest (rounded to 2)
- \*Note this methodology can result in scenarios where clean price \* face is not equal to principal amount
- Leap year is included in accrued, and for any bond that pays on February 28, payment does not roll to February 29.
- The ex-dividend period is 10 calendar days prior to coupon payment for government bonds.
- Prior to April 2004, this was one calendar month.
- The ex-dividend period for corporate issues varies.
- BXT allows users to apply or ignore ex-dividend conventions
- FPA & BSR allow for BESA methodology
- Settlement is T+3

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## 373: Long Last Coupon

- Similar to calc type 1.
- For issues that pay interest on non-anniversary dates of the maturity with a long last coupon.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Coupon amounts for standard coupon periods are calculated as coupon / coupon frequency \* face regardless of day count.
- Settlement defaults to T+1 for US Agencies, T+3 for all others. However there may be individual securities that apply their own specific market convention.

## 377: French Domestics Super Brut

- Used for the French corporates issued prior to Jan. 1, 1987.
- Generates a pre-tax, or super brut, yield.

## 393: Japan Simple Interest Method (Calc Type 51 with No Rounding)

- Used for Japanese government bonds which have either a normal or a short last coupon period.
- The first coupon period includes an extra day of interest, and the yield is simple.
- Accrued values are truncated, not rounded.

## 394: Japan Compound Method (Calc Type 52 with No Rounding)

- Used for Japanese government bonds which have either a normal or a short last coupon period.
- The first coupon period includes an extra day of interest and the yield is compound.
- Accrued values are truncated, not rounded.

## 397: Japan Simple Interest (Calc Type 299 with No Rounding)

- Used for Yen global bonds that trade during the first coupon period using the Eurobond accrual method.
- These issues pay an extra day like calc type 51 issues, but they are calculated on the first pay date only.
- Accrued values are truncated, not rounded.

## 398: Japan Compound (Calc Type 300 with No Rounding)

- Used for Yen global bonds that trade during the first coupon period using the Eurobond accrual method.

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- These issues pay an extra day like calc type 52 issues, but they are calculated on the first pay date only.
- Accrued values are truncated, not rounded.

## 401: German Genusscheine

- Used on the German corporate Genusscheine issues.
- The most recent coupon information must be updated.
- Allows you to adjust the first and last coupon payments based on information regarding the annual general meeting of the company.

## 405: German Genusscheinbonds

- Equivalent to calculation type 401, but uses conventional yield instead of Moosmueller.

## 407: Danish/Norwegian Ex-draw, Ex-dividend

- Used for Danish and Norwegian government and corporate sinking fund issues.
- No longer in use

## 411: Canadians (Calc Type 48 with Issue Date Override)

- Used for calc type 343, when the issue is a reopening of an existing issue.

## 415: Dutch Ex-Drawing Sinking

- Used for Netherlands government and corporate sinking fund issues.
- Bonds to be repaid are selected by drawing anywhere from weeks to months before the coupon redemption date.
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior dates.

## 419: Ex-Dividend Floaters

- Used for floating-rate notes that follow ex-dividend trading conventions.
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.

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- For securities with caps the future projected coupons will be calculated at the cap if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) exceeds the cap. For securities with floors the future projected coupons will be calculated at the floor if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) is below the floor. However, in both cases, the future periods will still be discounted at the current assumed rate plus discount margin, and the first period will still be discounted at the current index to next refix plus discount margin.
- A leap year adjustment factor is applied to discount formula for ACT/XX day accounts.
- For issues using day types of {xxx}/ACT, BLOOMBERG PROFESSIONAL® service uses a denominator of 366 when the current period ends in a leap year.
- For settlements that occur on or after the ex-dividend date, accrued interest is calculated as days from settle to next coupon / day count basis \* coupon \* face. Also the next coupon payment is excluded from the price / discount margin calculation

## 421: Multi-Step Bond

- Used for fixed, step, or variable coupon bonds with irregular coupon cash flows and/or payment dates that cannot be handled by calc types 1 (fixed) or 1311 (step). If a step or variable coupon bond has true coupon changes over its life, a Multi Coupon Schedule detailing the coupon rates and their respective end dates will appear in DES. Otherwise an annualized cash rate schedule will display. For fixed rate calc 421 bonds, a coupon schedule will not appear.
- Calc Type 421 in PPCR: for analytics to work, you must hand-enter coupon cash flows in percentage form (type 93 <Go> from PRIVATE SECURITY UPDATE screen). If you copy a security using PPCR2, the cash flow information from the real bond is copied over to the new private security. If you create a security using PPCR1, you need to fill in the cash flow information. If the bond has a sinking fund with irregular cash flow amounts and/or dates, then use calc type 435.

## 425: Multi-Coupon Fix to Variable

- Used for fixed to variable bonds, where the coupon steps from a fixed rate to a rate that is determined sometime in the future
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- YA/YAS allows users to override the variable rate
- Settlement calendar and T+ period may vary

## 427: Multi-Period Flirbs (Front Loaded Interest Reduction Bond)

- Used for fixed to variables bonds
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Allows for structures with non-standard coupon payment schedules



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- YA/YAS allows users to override the variable rate
- For Canadian domestic issues local conventions are applied. See calc type 48 definition.
- For Chinese domestic bonds it applies domestic conventions listed below
  - Day count is NL/365 for Shanghai or Shenzhen listed securities and ACT/ACT for all others
  - The year basis for the simple yield in the last period is determined as the number of days in a year from the penultimate coupon to one year later.
  - For China Interbank listed bonds BXT allows users apply CFETS price and yield rounding of 3 decimals
  - For Shanghai or Shenzhen listed bonds accrued interest is calculated inclusive of both the settlement and previous coupon. Note this will result in one day of interest for settlement on a payment date.
  - For sinking fund bonds that start to sink after 3/10/14, the price may be inclusive of the sink factor
  - Settlement is T+0 for Shanghai or Shenzhen listed bonds reflecting when the bond transfers to the buyer
  - Settlement is T+1 for China Interbank bonds

## 431: Multi-Step \$ Type Sinks

- Special calc type used for issues that accrete interest until maturity.

## 435: Percent-Type Cash Flow Sinkers

- Can be used for bonds when the sinking fund cannot be accommodated on the normal sinking fund page.
- Accommodates domestic Russian conventions for ruble denominated bonds, although not available in the Private Placement Update function (PPCR). For ticker RFLB applies T+0 settlement for trade dates previous to 6/1/15 and T+1 after. Corps apply T+0 settlement. See Calc 1155 for those conventions.
- You can hand enter cash flows (93 <Go> from PRIVATE SECURITY UPDATE screen) and factors (92 <Go> from PRIVATE SECURITY UPDATE screen).
- If you copy a security using PPCR2, the cash flow/factor information from the bond is copied over to the new private security. If you create a calc type security using PPCR1, you must enter the cash flows before you can access the factor page.
- After you enter the cash flow dates and rates, the factors are automatically calculated based off the initial cash flow dates and rates you enter, using the formula:

$$\text{CURRENT FACTOR} = \text{OUTSTANDING BALANCE} / \text{ORIGINAL BALANCE}$$

Where:

Original Balance = Issue Amount

Outstanding Balance = Original Balance - (SUM of Principal value before today.

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*Note:* The factor is only calculated immediately after the cash flow is entered. After the initial calculation, factors are not changed when cash flows are changed.

## 439: Danish Bullet Issues

- Used for Danish domestic fixed-rate bullet bonds.
- Yields are compounded on an annual basis regardless of coupon frequency
- Day count is typically ACT/ACT
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior dates

## 443: Finnish Domestic

- Used for Finnish domestic government and corporate bonds.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Prices are rounded to 3 decimals
- The majority of the bonds are bullet bonds paying annual coupons.
- As of Oct 6, 2014 settlement is T+2.

## 447: Indonesian T-Bills

- No longer in use.

## 449: Canada Index Linked

- Used for inflation adjusted bonds linked to CPI (CACPI Index)
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on issue date.
- An exception is the January 1995 CPI. It is 131.8632. This was a substitute rate issued by the Bank of Canada.
- Yields are compounded on the same frequency as the coupon frequency using an ACT/ACT day count, except in the last period.
- For settlement in the last period, or in the last year for zero coupons, simple yield is applied using an ACT/365 day count. For discounting purposes maturity is adjusted to the next business day if the original maturity falls on a non-business day. However, the actual date appearing on DES and calc route will remain the unadjusted date.
- Standard period coupon payments are calculated as coupon / coupon frequency \* face. Odd periods are calculated on an ACT/365 basis.
- Partial period accrued for invoicing is calculated on an ACT/365 basis. For most settlement scenarios accrued is calculated as (number of days from previous coupon to settlement) / (365 / coupon frequency) \* (coupon / coupon frequency) \* face. However for scenarios where

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accrued days is greater than (365 / coupon frequency) accrued is calculated as (1-(days from settle to next coupon payment) / (365 / coupon frequency)) \* (coupon / coupon frequency) \* face

- Note that an Act/Act day count is applied to accrued used in the discount formula to derive clean price
- Prices are clean, exclusive of inflation, therefore total payment equals price \* accrued \* index ratio \* face.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement defaults to T+3.
- Neither coupon or principal is deflation protected.

## 450: Canada Index Linked Bonds - Bank of Canada Equivalent Yield

- No longer in use.

## 456: MGS and Cagamas Fixed Rate Bonds

- Used for Malaysian Government and Cagamas Fixed Rate Bonds.
- Price and yield are rounded to 3 decimal places.
- Settlement is T+2.
- The day type is ACT/ACT for the Malaysian Government Bonds and ACT/365 for the Cagamas Fixed Rate Bonds.
- When calc type is applied to long term negotiable instruments of deposit money market securities (PGM NID <go>), the label changes to LT NID. However the calculation remains the same.

## 460: Multi-Adjusted Coupon Bonds

- Used for bonds which calculate coupon payments as number of days in a period over the basis
- The basis for day count ACT/360 is 360, the basis for ACT/365 is 365 and the basis for ACT/ACT is 366 for periods that end in a leap year and 365 for all others.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency. Simple interest is applied when settlement occurs in the last period.
- Accrued interest is calculated as days in partial period over the basis using the basis methodology described above
- Partial discount periods are calculated using as pays in period / (basis / coupon frequency)
- Future whole periods can be calculated as 1 / coupon frequency or pays in period / (basis / coupon frequency) depending on conventions of specific bond
- Price, yield or accrued may be rounded depending on the specific bond
- Handles bonds with ex-dividend conventions and those without.
- Default settlement is T+3, but may be different depending on conventions of the specific bond

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## 463: Multi-Coupon Cash Flow Bonds

- No longer in use.

## 471: Dutch Perpetuals

- No longer in use.
- Annual Quote.

## 473: Perpetual Floating-Rate Notes

- For floating rate securities with no stated maturity date.
- Calculates price to discount margin. For discount margin to maturity, discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods back to next coupon date on a current yield basis at assumed rate plus discount margin. For all other workouts follows same methodology as calc 21. See calc 21 definition for more details.

## 477: Ex-Dividend Floaters

- No longer in use

## 479: Danish Mortgage Bonds (\$)

- No longer in use
- See calc 483

## 483: Danish Mortgage Bonds (%)

- Used for Danish mortgage, annuity, and serial bonds.
- The bonds go ex-drawing 6-12 weeks, depending on the bond, before the coupon date.
- A standard internal rate of return calculation is performed based on the cash flows received from the Copenhagen Stock Exchange for each individual bond.
- Cash flows may not reach stated maturity.
- To view the cash flows, select the Schedules option from the DES sidebar.
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior dates
- The Ex-Dividend period was abolished in February, 2001.

## 487: Multi-Coupon Brady Bonds

- No longer in use

## 491: FLIRB Bradys

- No longer in use

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## 495: Brady C Bonds

- No Longer in Use
- Used only for the Brazil C bond.
- Cash flows are hard coded.
- The growth factor is rounded to five decimals.

## 507: Taiwan Domestic Corporate Bonds

- Yields are calculated on a compounded basis, including the last period.
- Prices appear with four decimal places, but trade numbers are calculated from non-rounded values.

## 511: Commercial Loans - Term Type

- Used for Floating Rate Term Loans and Synthetic Letters of Credit
- Default Settlement driven by Region (DS224). T+7 for US, LAT AMER and CANADA. T+10 for EURO, ASIA/PAC RIM and MIDDLE EAST/AFRICA.
- Day Count::
  - GBP, CAD, HKD, AUD Currency = ACT/365
  - Reset Index TIBOR = ACT/365
  - All others = ACT/360

## 513: Commercial Loans - Revolver Type

- No longer used.

## 533: Commercial Loans - Term Type

- No longer used as of 2010 -- anything active was changed to 511

## 515: Australian Floater

- Used for Australian domestic floating rate bond and preferreds that float off the Australian Bank Bill rates.
- Applies AFMA floating rate notes formula
- Future coupons are estimated as assumed rate + quoted margin
- Assumed rate is the interpolated rate to maturity off of the Bank Bill Swap Curve.
- Index to next fix is an interpolated rate to next refix off of the Bank Bill Swap Curve.

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- To see the corresponding Bank Bill Swap Curve run ICVS1 to select the AUD vs. 3M,6M Bank Bills curve. Change the name to AUD FRN. Apply CMPT as PCS, and on the Curve Analysis tab confirm curve side is set to Mid or matches the users YAS Yield Curve default setting.
- Price rounds to four decimals and six decimals in the last period. Discount margin rounds to six decimals.
- Accrued interest is rounded to three decimals on 100 face.
- Accrued interest is calculated from previous pay date to settlement, even for preferred securities.
- Ex-dividend trading conventions apply. Ex-dividend dates for corporate bonds and OTC preferreds are reported on a settlement date basis. Exchange listed preferreds are reported on a trade date basis.
- For preferred securities the following functionality applies
  - BXT/SXT defaults to a net of franking invoice. Users can select the tax rate of company franking percentage or change to a gross values
  - YA includes a Net Traded Margin equivalent
  - Exchange listed preferreds apply dirty / cash prices and trade in units.
- For trade dates prior to March 7, 2016 settlement is T+3 and T+2 on or after.

## 519: Multi-Coupon Adjusted Bond

- No longer in use

## 521: Accrued Only Floater

- Used for floaters where price/discount margin can not be calculated accurately
- Calculates accrued interest using the same methodology to calc type 21.
- No other analytics are performed by this calc.
- BXT/SXT <Go> shows the accrued figures.
- For issues using day types of {xxx}/ACT, BLOOMBERG PROFESSIONAL® service uses a denominator of 366 when the current period ends in a leap year.

## 522: Special NO CALCULATIONS Calc Type for U.K. Preferreds

- Used for any U.K. convertible and zero-coupon preferred that cannot be properly analyzed.
- Trade amounts converted to pence.

## 523: Italian BTPS

- Used for the Italian fixed rate bonds including government BTPS issues
- Yield convention is annual compounding, considers cash flows bumped off of non-business days on a modified following basis.
- YA allows users to calculate net yields on and override the tax rate.
- BXT allows users to calculate net yields, net accrue, and override the tax rate.
- Settlement was T+3 previous to Oct 6, 2014, T+2 business days after



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- Accommodates long last coupon.
- Accrued interest is rounded to five decimals on government bonds, but can vary on corporate bonds
- Accrued is calculated as follows:

$((\text{coupon}/100)/2) * (\text{accrued days} / \text{days in period}) * 100$  ROUND to 5 decimal places. Then multiple face/100 \* factor.

Using example bond EI8896348 Corp with a settle of 12/18/14 and face of 100000 =  $(.0525/2) * (27/181) * 100 = 0.3915745$  rounded to 0.39157 times 1000000/100 \* .80 = 3132.56

- Cash flows on CSHF show net or gross depending on COVR setting.
  - For bonds issued before Jan 1 1997 gross principal is displayed inclusive of some taxes. The calculation is  $(100 - ((100-IP)*TR)*(DTM-(DTM-DNC))/DTM)*1000=IV$ . Then round IV, then  $(IV*f/1000)/100$ .
  - Net coupon amount =  $GC * (1-TR)*f$ .
  - Net principal is displayed for bonds where issue price is less than 100. The calculation is  $100-(100-IP)*TR*face/100$ .

Where:

GC= gross coupon

IP = issue price

TR = tax rate. The tax rate is 12.5% for government and municipal bonds and 26% for others.

DTM= days from issue to maturity

DNC=days from issue to first coupon past Jan 1, 1997

IV=Intermediate value. IV is rounded as follows

If IV value right of the decimal <.25 then round down. If value >.75 then round up. If in between round to .5


f= Face amount

- This calc also supports Euro AFB daycounts (an accrued basis of 365 days when the coupon period does not include February 29th, and an accrued basis of 366 days when February 29th is included).

## 527: Italian Treasury Three-, Six-, and 12-Month Bills

- Used for Italian 3 to 12 month treasury bills, BOTS.
- Yield is calculated on a simple basis using an Act/360 day count.
- YA allows users to calculate net yields on and override the tax rate.
- Default settlement is T+2

## 529: Italian Treasury Two-Year Bills

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- Used for Italian 2 year treasury issues, CTZS.
- Calculates annual compound true yield when settlement occurs greater than 1 year from maturity.
- Calculates simple true yield when settlement occurs within 1 year of maturity
- Settlement was T+3 previous to Oct 6, 2014, T+2 business days after

## 531: Czech T-bills: Net Yield

- Used for Czech Republic treasury bills.
- Yield is calculated on a simple basis using an Act/360 day count.
- YA and BXT allows users to calculate net yields on and override the tax rate.
- Default settlement is T+2

## 533: Commercial Loans - Term Type

- No Redemption Value.

## 535: Russian GKO Government Bonds

- G=government
- K=short-term
- O=Obligation (Gosudarstvenniye Korotkosrochniye Obligatzii)
- Interest at maturity - Securities are zero coupon bonds issued at a discount. Yields are simple on trade tickets.
- YA displays the Annual Principal Yields.
- Settlement at T+0.

## 537: French Floater: P3R

- Used for French domestic floating-rate notes based on the 3-month Pibor index.
- The coupon is pre-determined using the 3-month Pibor from two business days before the start of the quarterly interest period.
- P3R issues with calc type 537 pay their coupons on the third Wednesday of the third month of each quarter.

## 541: French Floater: TME

- Used for French domestic floating rate notes based on the TME index.
- Accrued interest is calculated based on an annual coupon rate which equals the average of the 12 monthly TMEs preceding the coupon payment. As this coupon rate is post-determined, not all 12 TMEs are available at the time accrued interest is calculated. The average takes into account the monthly TMEs up to and including the last available TME.

# Bloomberg

- For days of accrued since the month of the last available TME, the last available weekly TME index and projected TME index are incorporated into this average.

## 543: TMM: French Floaters

- No longer in use.

## 545: Brady Floaters with Swap Curve

- No longer in use.

## 549: Iceland Index-Linked bonds

- No longer in use.

## 551: Philippines Government and Domestic Corp Bonds

- Applies street convention price/yield calculations.
- Yields are rounded to six decimals.
- Invoice amounts are adjusted for withholding tax.
- Tax rate defaults to 20%.
- Settlement is T+1.
- Structures that pay the end of February and August 30<sup>th</sup> causes some anomalies using the market convention day count of ICMA 30/360 since neither semi-annual period would be 180 days in length. With this in mind this model makes some adjustments to best match market conventions.
- In the discount formula all whole periods will be calculated as an integer. For example if settlement occurs on a payment date, the value of the upcoming period would be considered 1. All subsequent periods would be considered 1 plus the value of the previous period. All partial periods will still apply the days in the period using ICMA 30/360.
- Using ICMA 30/360 there may be cases where accrued days exceeds 180 days, which theoretically would cause the accrued interest value to exceed the coupon value. In these scenarios, the maximum accrued value will equal the coupon.

## 555: French Floater: P3M

- Used for French domestic floating-rate notes based on the P3M index.
- Accrued interest is calculated based on an annual coupon rate which equals the average of the 12 equivalent annual yields of the 12 monthly averages of the 3-month Pibor preceding the coupon payment.
- Each month's average 3-month Pibor is the average of all the readings of the 3-month Pibor for that month.
- As this coupon rate is post-determined, not all 12 equivalent annual yields of the 12 monthly averages of the 3-month Pibor are available at the time accrued is calculated.
- The average takes into account the equivalent annual yields of the monthly averages of the 3-month Pibor available up to that point.

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- For days of accrued interest after the last available equivalent annual yield, projected equivalent annual yields are incorporated in the average.

## 557: French TAM

- Used for French domestic floating-rate notes based on the TAM index.
- Accrued interest is calculated based on an annual coupon rate which is the compounded average of the 12 monthly TMM indexes preceding the coupon payment.
- As this coupon rate is post-determined, not all 12 TMM indexes are available at the time accrued interest is calculated.
- The compounded average takes into account the monthly TMM indexes up to and including the last available TMM index.
- For days of accrued since the month of the last available TMM index, the last available daily TMP and projected TMM indexes are incorporated into this compounded average.

## 559: French P1C

- Used for French domestic floating-rate notes based on the P1C index.
- Accrued interest is calculated based on an annual coupon rate, which is the compounded average of the 12 averages of the 1-month Pibor for the 12 months preceding the coupon payment.
- Each month's average 1-month Pibor is the average of all the daily readings of the 1-month Pibor during that month.
- As this coupon rate is post-determined, not all 12 monthly averages of the 1-month Pibor are available at the time accrued interest is calculated.
- The compounded average takes into account the monthly averages of the 1-month Pibor available to that point.
- For days of accrued after the last available daily 1-month Pibor, this last available rate is incorporated into the compounded average.

## 565: Brady Bonds Modified Cash Flow Model (MCF)

- Par bond Strip Yield calculation


## 575: Brady Bonds Modified Cash Flow Model (MCF)

- FRN bond Strip Yield calc floater

## 579: TBM/THB: French Floaters

- No Longer in use.

## 585: Floaters with Real ACT/ACT Day Type

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- Similar to calc type 21.
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.
- For securities with caps the future projected coupons will be calculated at the cap if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) exceeds the cap. For securities with floors the future projected coupons will be calculated at the floor if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) is below the floor. However, in both cases, the future periods will still be discounted at the current assumed rate plus discount margin, and the first period will still be discounted at the current index to next refix plus discount margin.
- Applies real ACT/ACT (ISMA), for calculating discount periods, current period cash flows and accrued interest, meaning that the denominator equals the number of days in the period.

## 587: Inverse Floaters with Real ACT/ACT Day Type

## 591: Brazil C Bond: MCF Model - Par Bond Strip Yield Calculation

- No Longer in use.

## 593: Discount/Simple Yield - Always Uses the Day Type Entered

## 597: Brady Bonds Modified Cash Flow Model (Mcf)

- Multi-x bond strip yield calc floater.

## 602: Hungary T-bills

- Used for Zero coupon and interest paid at maturity securities.
- Yield convention is simple interest.
- Price is rounded to 4 decimals.
- Yield is rounded to 2 decimals.

## 607: Multi Coupon Bonds

- Used for any street convention multi-coupon bonds that have up to seven, fixed coupon rates for the life of the bond.

# Bloomberg

- Applies Similar to calc type 133, but it can accommodate up to 600 cash flows.
- Cash flows are not adjusted for good business days and coupon payments are derived by coupon/frequency.
- Yields are calculated on a compounded basis using the coupon frequency for all periods except the last period. In the final period before maturity, simple yield is applied.
- When used with day count 30/360, accrued interest is calculated using SIA 30/360 methodology.
- When used with day count ISMA-30/360, accrued interest is calculated using ICMA (ISMA) 30/360 methodology.
- When used with day count ACT/ACT, accrued interest is calculated using ICMA (ISMA) ACT/ACT methodology (US treasury note/bond methodology).
- When the day count is ACT/360 or Act/365, the discount periods in the price/yield formula are calculated using that day count
- Supports Italian domestics conventions similar to calc 523
- For Argentina government bonds cash flows are calculated on an ICMA (ISMA) 30/360 basis, yields are discounted on an Act/365 annual basis.
- For ARS denominated bonds Price is dirty an inclusive of inflation (CER factor).
- For INR denominated securities YA and BXT display an XIRR yield equivalent, which is annual compounding using an ACT/365 day count.

## 609: TRO: French Floaters

- No Longer in use.

## 611: TRE: French Floaters

- No Longer in use.

## 613: TRA: French Floaters

- No Longer in use.

## 615: TMO: French Floaters (Pre-Determined)

- No Longer in use.

## 617: TMO: French Floaters (Post-Determined)

- Used for Perpetual floaters linked to TMO
- Discount margin & yield are calculated on a compound basis, on the same frequency as the coupon frequency. Yield is rounded to 6 decimals



# Bloomberg

- Rate is calculated as the 12 month average of TMO + quoted margin. The rate determination period starts one month before the previous coupon payment and ends one month before the payment date.
- For settlements when the next coupon rate is unknown the rate is projected taking into account the known TMO rates from the beginning of the rate determination period up to the last known monthly rate as well as the THO rates from the last known monthly TMO rate to the last known weekly rate. Unknown periods are projected using the latest THO rates.
- Accrued applies similar methodology.
- Applies TMO & THO rates published by the Banque de France BDF1TMO Index and BDF THO Index respectively.
- Settlement is T+3.

## 619: TMB: French Floaters

- No Longer in use.

## 621: U.S. Inflation-Linked Bonds: Street Convention With Accrued

- Used for US Treasury post auction bonds linked to US CPI All Urban Consumers NSA (CPURNSA Index) that are issued with accrued interest.
- Yields are calculated on a semi-annual compound basis except in the last period, where it applies simple yield.
- Price is exclusive of inflation
- Day count is ACT/ACT.
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore, total payment equals price \* accrued \* index ratio \* face.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement is T+1.
- Principal minimum redemption value is 100% of nominal value.
- Equivalent to calc type 102 (street convention).

## 622: U.S. Inflation-Linked Bonds: When Issued Yield With Accrued

- Used for US Treasury when issued bonds linked to US CPI All Urban Consumers NSA (CPURNSA Index) that are issued with accrued interest.
- Primary yield convention is U.S. Treasury WI auction yield (CD compounding)
- Prices are rounded to 6 decimals
- Day count is ACT/ACT.

# Bloomberg

- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore, total payment equals price \* accrued \* index ratio \* face.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement is T+1.
- Principal minimum redemption value is 100% of nominal value.
- Equivalent to calc type 101 (street convention).

## 624: French Floater: TEC10, Price/Yield


- Used for French domestic floating rate notes based on the TEC10 index.
- Discount margin is quoted on an annual basis regardless of coupon frequency.
- Crystalization rate = current rate of the underlying benchmark.
- Coupons are calculated on a compound basis  

$$(1 + (\text{benchmark rate} + (\text{spread}/100))/100)^{(1/\text{coupon freq})} - 1$$
- Rates that appear on DES are annualized un compounded rates, (benchmark + spread).
- Accrued is rounded to 7 decimals.
- See IDOC 2073292 for more information on sensitivity analysis

## 639: Domestic Fixed Rate Thailand Bonds

- Yields are calculated on a compound basis, compounding on the same frequency as the coupon frequency
- Price, yield, and accrued interest are rounded to six decimals. Clean price is calculated as dirty price rounded to 6 decimals – accrued interest rounded to 6 decimals = clean price rounded to 6 decimals. This is all on 100 par.
- Day count is typically ACT/365 with semi-annual coupon frequency.
- Accrued interest and coupon payment on CSHF are calculated based on ACT/365 basis
- Price/Yield formula on sinking fund bonds assumes coupon payments for standard periods are calculated on an Act/365 basis, but the formula for non-sinking bonds assumes standard coupon payments are calculated as coupon / coupon frequency. In both cases odd periods are calculated as ACT/365.
- Accommodates different numbers of ex-dividend days, but default to 14 calendar ex-dividend days.
- Settlement defaults to T+2.

## 643: Fixed Rate Indian Government Bonds

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- Used for Indian government bonds.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods using a ICMA 30/360 day count, except the last period. In the last period simple yield is applied on an Act/365 basis.
- Yield is rounded to four decimal places.
- Price is not rounded
- YA and BXT display an XIRR yield equivalent, which is annual compounding using an ACT/365 day count.
- The settlement convention is T+0 for all deals done before 2 p.m. and T+1 for all deals done after 2 P.M. local time.
- Accrued is calculated on an ICMA 30/360 basis.

## 647: India Government Annual Equivalent

- No longer in use.

## 648: U.S. Inflation-Linked Bonds: Street Convention

- Used for US Treasury post auction bonds linked to US CPI All Urban Consumers NSA (CPURNSA Index) where issue date equals dated date.
  - Yields are calculated on a semi-annual compound basis except in the last period, where it applies simple yield.
  - Price is exclusive of inflation
  - Day count is ACT/ACT.
  - Inflation adjustment or index ratio equals reference CPI / base CPI.
  - Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
  - Prices are clean, exclusive of inflation, therefore, total payment equals price \* accrued \* index ratio \* face.
  - Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
  - Yield beta can be overridden on COVR.
  - Settlement is T+1.
  - Principal minimum redemption value is 100% of nominal value.
- Equivalent to calc type 1 (street convention).

## 649: U.S. Inflation-Linked Bonds: When Issued Yield

- Used for US Treasury when issued bonds linked to US CPI All Urban Consumers NSA (CPURNSA Index) where issue date equals dated date.
- Primary yield convention is U.S. Treasury WI auction yield (CD compounding)
- Prices are rounded to 6 decimals

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- Day count is ACT/ACT.
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore, total payment equals price \* accrued \* index ratio \* face.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement is T+1.
- Principal minimum redemption value is 100% of nominal value
- Equivalent to calc type 2 (U.S. Treasury yield).

## 654: Indian Government - with Voucher

- No longer in use.

## 655: Indian Government - with Voucher - Annual Equivalent

- No longer in use.

## 657: P3R Non Third Wednesday Coupon Dates - French Floaters

- Used for French domestic floating-rate notes based on the 3-month Pibor index.
- The coupon is pre-determined using the 3-month Pibor from two business days before the start of the quarterly interest period.
- Similar to 537 buy pays coupons on standard quarterly basis

Accrued formula

$(\#Days \text{ Accrued} / \#Days \text{ In Period}) = X$  (Round to 7 decimal places)

$(Coupon \text{ In Decimal} / Freq) = Y$  (Round to 7 decimal places)


$X * Y = Z$  (Round to 7 decimal places)

$Z * Trade \text{ Amount} = \text{Accrued}$

- No longer in use

## 659: Australian Inflation-Indexed Annuity Bonds

- Used for annuity bonds linked to Australian CPI (AUCPI Index).
- Nominal annuity payments are adjusted for inflation using the following formula base annuity payment \* highest CPI value inclusive of the period from the quarter before issue date to the quarter before payment date / CPI for the quarter previous to the issue date rounded to 3 decimals on 100 par.
- Follows AFMA conventions.
- Yields are calculated on a quarterly compounding basis rounded to 4 decimals.

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- Prices are dirty, inclusive of inflation and rounded to 4 decimals. Therefore price \* face = total payment.
- Applies ex-dividend conventions. Although dirty, the price/yield calculations excludes the next payment amounts when settle falls in a ex-dividend period. Ex-dividend periods may vary.
- For trade dates prior to March 7, 2016 settlement is T+3 and T+2 on or after.
- On October 24, 2012 the CPI value used to calculate the inflation adjustment on these securities was rebased. For settlements on or after October 29, 2012, inflation values will be calculated using the new base. These values can be found on AUCPI Index. For settlements previous to this date, the old base found on AUCPI90 Index will be applied. This convention is in accordance with AFMA instructions.

## 662: Hungarian Government Bonds

- Used for Hungarian fixed rate bonds
- Uses ACT/ACT day type
- Prices are rounded to four decimal places
- Bonds trade on the clean price, but during the ex-dividend periods the discount formula excludes the next cash flow. For that reason, to avoid double adjustment in the period, accrued interest equals zero.
- Invoice values, including principal, accrued and total payments are calculated on 10000 par and rounded to 2 decimals. The that value is multiplied by position/10000 to arrive at the invoice value.
- As of September 3, 2007, there is a standard one business day ex-div period.
- For S/A securities issued prior to March 1, 2002, the accrued interest is based on NL/365 until the first scheduled coupon payment commences following March 1, 2002, then accrued is based on an ACT/ACT day count.
- Settlement period is T+2.

## 666: U.S. CPI floaters - Street Real


## 670: Perpetual Step-Down Preferreds

- No longer in use.

## 676: Malta T-Bills: Price/CD Yield

- Used for Malta Treasury bills.
- Triggers same day settlement and prices. Yields are rounded to four decimal places.

## 680: Thailand T-Bills

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- Used for Zero coupon THB denominated securities.
- Yields are calculated on a simple basis and rounded to 6 decimals.
- Default settlement is 2 business days however Thai T-bills default to 3.

## 684: Uruguay T-Bills Price/CD Yield

- No longer in use.

## 688: US CPI FRN EFF SPD - CPI floaters

- Floating rate notes whose payments are based on the rate of change in the CPI-U.
- The coupons are determined by adding a spread/margin to the percent change in the underlying CPI index.

## 690: Spanish Multi-Coupon (Annual)

- Used for Spanish domestic multi-coupon bonds when all the coupon rates are known at the time of issue.
- This calc type does not calculate yield to maturity equal to true yield if the maturity date falls on a weekend.
- Requires a coupon schedule page.
- YA can be used to view the scheduled pay dates and amounts.
- Triggers a T+5 settlement period.

## 694: Ecuador PDI - Brady MCF Strip

- Also used for Macedonia Capitalization bonds.

## 697: Greek T-Bills: Gross/Net

- Used for Greek Treasury bills.
- Incorporates the 7.5% tax rate and triggers a T+2 settlement period.

## 710: Venezuela T-bills

- Used Venezuela treasury bills
- Yield is calculated on a simple basis using an Act/360 basis.
- Yields rounded to 3 decimals
- Prices rounded to 4 decimals
- Default settlement is T+1.



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## 712: Brazil BBC/LTN Bonds

- LTN is a short term zero-coupon National Treasury bill.
- Priced as a conventional zero-coupon bond using the Brazilian business days/252 day count convention.
- These securities are traded at discount and issued in unitary price (PU), which is the same as cash price, therefore total payment equals price \* # of units.
- Yield quoted on a compound business day / 252 basis
- YTM non-annualized equivalent equals redemption value / price - 1 in percentage form.
- Over rate equivalent is calculated as follows:  

$$[(1 + \text{YTM Annualized} / 100)^{(1/252)} - 1] * 3000$$
- Settlement is T+1.
- Price is truncated to 6 decimals.
- Yield is truncated to 4 decimals.
- DV01 is expressed in cash terms.
- Duration is calculated as business days to maturity / 252

## 714: Brazil NTN/NBC Bonds

- No Longer in Use
- Central Bank Notes pay a fixed rate semi-annual coupon with same-day settlement.
- Coupon and redemption are linked to the Brazil PTAX rate and trade as a unitary price taken to eight decimal places, therefore total payment equals price \* # of units.

## 716: Indonesian Fixed-Rate Bonds

- Yields are calculated on a compounded basis on the same frequency as the coupon frequency.
- On USD government bonds price is rounded to 3 decimals on 100. Values from 0.00050 and below are rounded down to the nearest 3th decimal place. Values above 0.00050 are rounded up.
- On IDR denominated bonds accrued is rounded to 4 decimals on 100. On government bonds values from 0.00005 and below are rounded down to the nearest 4th decimal place. Values above 0.00005 are rounded up.
- Accrued is rounded to the nearest rupiah on corporate bonds
- BXT allows users to calculate both price and invoice amounts exclusive of withholding tax (Gross) or inclusive of withholding tax (Net).
- Settlement defaults to T+2.

## 720: Indonesian Step-Ups

- Incorporates withholding tax.

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## 721: Multi-Dividend % Preferred

- Used for variable reset issues.

## 730: Spanish Letras

- Used for all Spanish T-bills.
- Calculates simple interest for the 6- and 12-month bills and compound interest for the 18-month bills.
- Settlement defaults to T+2.

## 738: Indonesian Floaters

- Calculates price to discount margin. Discounts first period on a simple yield basis rate to next fix. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Clean price is rounded to 4 decimals.
- Accrued is rounded to 4 decimals. On government bonds values from 0.00005 and below are rounded down to the nearest 4th decimal place. Values above 0.00005 are rounded up. On corporate bonds values from 0.00005 and above are rounded up to the nearest 4th decimal place. Values below 0.00005 are rounded down.
- Allows users to calculate both price and invoice amounts on YA and BXT exclusive of withholding tax (Gross) or inclusive of withholding tax (Net).
- Assumes future cash flows are based on a flat rate of assumed Rate + Spread.
- For ACT/ACT bonds it applies real ACT/ACT (ISMA), for calculating discount periods, current period cash flows and accrued interest, meaning that the denominator equals the number of days in the period.
- Settlement defaults to T+2.


## 742: Indonesian Fix-to-Float

- Similar to calc type 425, but used on Indonesian fixed-to-floating domestic bonds.
- Price is rounded to 4 decimal places, gross yield 2 places.
- Settlement is T+2.
- This calculation also incorporates Indonesian withholding tax options.

## 751: Accrued Only

- This is used on issues for which we cannot correctly calculate future cash flows and yields.
- Accrued calculations work only on BXT and SXT <Go>.
- This calc type is used only on fixed-rate issues.

## 752: U.K. Strips (Coupon and Residual)

FRANKFURT   HONG KONG   LONDON   NEW YORK   SAN FRANCISCO   SÃO PAULO   SINGAPORE   SYDNEY   TOKYO    Press the <HELP> key twice for instant live assistance.

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- Used for UK Gilt Strips
- Yields are compounded on a semi-annual basis.
- No rounding on price or yield
- Do not trade ex-dividend.
- Settlement is T+1

## 760: Polish Government Bonds

- Used for Polish fixed rate bonds
- Uses Act/Act or Act/365 day type.
- Bonds trade using an ex-dividend that varies depending on the issue date (latest issues use a 2-days ex-div period).
- Price is usually clean, but during the ex-div, prices are adjusted by the market to include negative accrued interest. For that reason, to avoid double adjustment in the period, a value of 0 appears in the Accrued Interest field.
- Accrued interest is calculated on a nominal 1000 Zloty face amount and rounded to two decimal places.
- Settlement period is T+2.
- Note: Older bonds have different rules for ex-div, which differ from bond to bond. To verify the ex-div for a specific bond, enter {ticker symbol} <CORP> DES <Go>. When the Description page appears, click on the option displays further information. Note: DES displays calendar days, not business days.

## 764: South Korean Compound Bonds

- Used for South Korea fixed-rate bonds paid at maturity and zero coupon bonds.
- Bonds are priced on a dirty basis and truncated to 10,000 won.
- Primary yield is habitual yield.
- Invoice amounts are truncated to 10,000 won before multiplying by face.
- YA displays two modes. I mode does not apply any tax. D mode applies withholding tax on accrued and adjusts invoice numbers accordingly.
- $TOTAL\ TAX = ACCR\ INT\ FOR\ TAXES * X$ , where X is tax rate.  
 $TAX\ ADJUSTMENT\ FACTOR = TOTAL(BEFORE-TAX) - TOTAL\ per\ Face - TOTAL\ TAX$
- COMMISSION - Calculation based on per 10,000 Won.  
 $COMMISSION = X * Face\ Amount$ , where X is percentage of 10,000(Won).
- See YA <HELP> for calculation details.

## 768: South Korean Fixed-Rate Bonds

- Bonds are priced on a dirty basis and truncated to 10,000 won.
- Primary yield calculation is habitual yield. See YA <Help>, Calculations, South Korean Domestic Bond for more detail.

# Bloomberg

- For the Korea Treasury Bond NDFB <CORP> <Go> and Korea Monetary Stabilization Bonds KORMSB <CORP> <Go>, when the coupon payment date falls on a Saturday or holiday preceding a weekend, it is moved back to the previous good business day. When the coupon payment date falls on Sunday or holiday not preceding a weekend, it is moved forward to the next good business day according to the South Korean calendar CDR SK <Go>. Other securities outside of these tickers do not display bumped payment dates.
- For Korea Development Bank and Shinhan Bank securities cash flows are rounded to zero decimals on 100,000 par.
- First settlement can occur before the interest accrual date. For scenarios where settlement occurs before the interest accrual date, price/yield calculations will continue to apply the habitual yield formula. However, for discounting purposes, will assume settlement occurs in a pseudo period that starts one standard period pay date prior to the interest accrual.
- TAX-Invoice amounts are adjusted for withholding tax.  

$$\text{TOTAL TAX} = \text{ACCR INT FOR TAXES} * X, \text{ where } X \text{ is tax rate.}$$

$$\text{TAX ADJUSTMENT FACTOR} = \text{TOTAL(BEFORE-TAX)} - \text{TOTAL per Face} - \text{TOTAL TAX}$$

$$\text{*COMMISSION} - \text{Calculation based on per 10,000 Won.}$$

$$\text{COMMISSION} = X * \text{Face Amount, where } X \text{ is percentage of 10,000(Won)}$$

## 772: Brady Bond Modified Cash flow Model (MCF)

- FRN bond Strip Yield calc for flat trading floaters. Used on Russian IAN bonds.

## 776: South Korean Simple Interest Bonds

- \*TAX-Invoice amounts are adjusted for withholding tax.  

$$\text{TOTAL TAX} = \text{ACCR INT FOR TAXES} * X, \text{ where } X \text{ is tax rate.}$$

$$\text{TAX ADJUSTMENT FACTOR} = \text{TOTAL(BEFORE-TAX)} - \text{TOTAL per Face} - \text{TOTAL TAX}$$
- \*COMMISSION - Calculation based on per 10,000 Won.  

$$\text{COMMISSION} = X * \text{Face Amount, where } X \text{ is percentage of 10,000(Won)}$$

## 785: Argentina Bocones

- Like calc type 861 but it can handle more sink payments. For detailed definition, see calc 861.

## 787: Fixed-Rate Russian Federal Loan Bonds with Annual Coupon Payments

- No longer in use

## 791: Callable Interest at Maturity

- Used for issues that are callable and pay their entire coupon at maturity. See calc types 7 and 269 for similar calculations.

# Bloomberg

## 804: Vietnamese Par Bonds

- Used For Vietnam Par Brady Bonds
- Multi-coupon bond
- Primary yield calculation is stripped yield which removes the value of the interest and/or principal guarantee from the present value formula
- Yields are compounded on the same frequency as the coupon frequency

## 808: German Schuldschein Floater

- Like calc type 21 but does not display accrued interest.

## 810: Adjusts the Time Periods Between Coupon Payment Dates According to the Underlying Day Type of the Bond

- For ACT/ACT, period = 1.
- Does not adjust the coupon payment for the regular period.

## 811: German Schuldschein Multi-Coupon Bonds

- Specific to German step-up bonds.

## 813: German Schuldschein Multi-Coupon Cash Flows

- Used for German step-up bonds, where the cash flow payments are not readily calculated from the stated coupon.

## 820: Special No Calculation Calc Type

- Used on fixed rate and zero coupon bonds.
- It blocks the issues from being booked in client's trading systems.

## 823: Canadian Pay-in-Kind

## 827: Fixed-Rate Russian Federal Loan Bonds with Semi-Annual Coupon Payments.

- No longer in use

## 832: Japanese Bonds - Long Last Coupons - Simple Yield

- Used for Japanese bonds (including Samurai bonds but excluding government and convertible bonds) that have a long last coupon period (ACT/365).
- Simple and compound yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.

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- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- Settlement is T+3.
- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:  
Accrued Interest Factor (X):  
 $100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$   
Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$   
Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 834: Japanese Bonds - Regular or Short Last Coupons - Simple Yield

- Used for Japanese bonds (including Samurai bonds but excluding government and convertible bonds) that have either a normal or short last coupon period (ACT/365).
- Simple and compound yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- Settlement is T+3.
- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:  
Accrued Interest Factor (X):  
 $100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$   
Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$   
Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.



# Bloomberg

- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 836: Swedish Index Linked Government Bonds

- Used for fixed rate bonds linked to SWCPI.
- Price is clean price inclusive of inflation represented by the index ratio rounded to 3 decimals, therefore net amount equals  $\text{price}/100 * \text{face}$  and gross amount equals  $(\text{price}/100 + \text{inflation adjusted accrued}) * \text{face}$ .
- Yields are not rounded
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date using an ISMA (ICMA) 30/360 day count Base CPI is the reference CPI on interest accrual date.
- Bonds issued before 1999 all apply a January 1994 CPI as the base. Those issued in 1999 use the January 1999 CPI as the base.
- Those issued from 2005 onwards, base CPI is calculated on the interest accrual date using the same interpolation formula as the reference CPI
- Accrued applies a four business ex-dividend convention.
- Accrued interest is not rounded
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.
- Bonds issued before 1999 have no coupon or principal protection. Those issued 1999 or after will pay a minimum of 100% of nominal value, both coupons and principal.

## 840: Japanese LIBOR Based Floater - Compound Yield

- Used for Japanese bonds that use a yen-LIBOR benchmark
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.
- A leap year adjustment factor is applied to discount formula for ACT/XX day counts.
- Settlement is T+3.
- For sinking fund bonds discount margin is calculated to longest average life workout date.

# Bloomberg

- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- The accrued interest factor is truncated and calculated as follows:  
Accrued Interest Factor (X):  
 $100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$   
Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$   
Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 843: Japanese Accrued Only Floater

- Used for Japanese floater bonds that use a yen-swap benchmark.
- Allows users to calculate accrued interest on BXT.
- Other analytical functions are not available
- Settlement is T+3.
- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- The accrued interest factor is truncated and calculated as follows:  
Accrued Interest Factor (X):  
 $100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$   
Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$   
Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box

## 846: Japanese Multi Coupon Bonds - Compound Yield

- Used for Japanese bonds that have more than one but less than eight fixed coupon rates for the life of the bonds.
- When a coupon date falls on non-business day, payment will be made previous business day with no amount adjustment. CSHF will show adjusted dates. In this case, BXT will show zero accrued between the previous business date and the coupon date.
- Settlement is T+3.

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- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- The accrued interest factor is truncated and calculated as follows:  
Accrued Interest Factor (X):  
 $100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$   
Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$   
Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 848: Saudi Arabian Government Bonds

- Calculates true compound yield, bumping payment dates off of non-business days.
- Changes to simple yield when settlement occurs in the last period, applying bumped dates.
- Defaults to T+2 settlement.
- Prices, yields, and accrued interest are not rounded.

## 852: Chinese Government Bonds

- Used on all Chinese Government Bonds and some corporate fixed rate bonds that are traded in the China Interbank market.
- Yield calculated on a compound basis except in the last period where simple yield is applied. The year basis for the simple yield in the last period is determined as the number of days in a year from the penultimate coupon to one year later.
- YA displays clean prices and accrued interest. When the security is in a WI period the coupon rate may be overridden
- When the security is in a WI period BXT allows the coupon rate may be overridden.
- For China Interbank listed bonds BXT allows users apply CFETS price and yield rounding of 3 decimals
- Day count is NL/365 for Shanghai or Shenzhen listed securities and ACT/ACT for all others
- For Shanghai or Shenzhen listed bonds accrued interest is calculated inclusive of both the settlement and previous coupon. Note this will result in one day of interest for settlement on a payment date.
- For sinking fund bonds that start to sink after 3/10/14, the price may be inclusive of the sink factor
- Settlement is T+0 for Shanghai or Shenzhen listed bonds reflecting when the bond transfers to the buyer
- Settlement is T+1 for China Interbank bonds

## 856: Mexican Udibonos

- Redemption and coupon linked to Mexican inflation through UDI (MXUDI Index).
- Yields are calculated on a real basis, assuming payments in UDI. Follows Valmer's cashflow based calculation.
- Coupon frequency is on a day pay basis (7, 14, 28, 91, 364 days).
- Coupon payment dates are adjusted on previous business day basis. In the case of government securities, coupons are only paid on Thursdays.
- Coupon payments amounts and discounting periods are adjusted accordingly and calculated on an ACT/360 basis.
- Conversion to Mexican pesos is used only for settlement amount and nominal yield calculation.
- Prices are clean and in UDI therefore total payment in MXN equals price + accrued \* face \* applicable UDI rate.
- Settlement is T+2
- If a user enters a settlement date that is not a good business day according to CDR MX, then the UDI index value will default to the previous business days value.

## 861: Argentina BOCONES Residual Bonds

- Floating-rate notes with a settlement of T+3.
- Prices are quoted on a residual basis.
- For Peso denominated issues, future cash flows are held constant according to the prevailing ARDSAVE <INDEX>.
- U.S. dollar denominated issues use the same methodology for estimating future cash flows as Brady bonds. YA <HELP> displays further information.

## 862: Corporate Floaters

- The same as calculation type 21 except for long last coupons.

## 864: French Index-Linked Bond

- Used for inflation-linked bonds tied to the unrevised French CPI excluding tobacco (FRCPXTOB index).
- Yields are calculated on a compound basis on the same frequency as the coupon frequency assuming nominal payment amounts.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.

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- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore total payment equals price \* accrued \* index ratio \* face.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.
- Principal minimum redemption value is 100% of nominal value.
- Equivalent to nominal bond calc type 89.

## 868: Preferred Stock - Cash Type

- Like calc type 56, but used for issues denominated in Euro.
- Only used for issues that have had the first ex-dividend period updated.
- For issues prior to first ex-dividend period, use calc type 872.

## 869: Preferred Stock - % Type

- Like calc type 56, but used for issues denominated in Euro.
- Used for preferred issues where the dividend is quoted in percent values. Only used for issues that have had the first ex-dividend period updated.
- For issues prior to first ex-dividend period, use calc type 873.

## 872: New Issue Preferred Stock - Cash Type

- Like calc type 205, but used for issues denominated in Euro.
- Only used for new issues that do not have the first ex-dividend period updated.
- For issues after the first ex-dividend period, use calc type 868.

## 873: New Issue Preferred Stock - % Type

- Like calc type 206, but used for issues denominated in Euro.
- Only used for new issues that do not have the first ex-dividend period updated.
- For issues after the first ex-dividend period, use calc type 869.

## 876: Floating-Rate Preferred Stock - Cash Type

- Like calc type 103, but used for issues denominated in Euro.
- Used for adjustable/floating-rate preferreds where the dividend is quoted in dollars.
- Must be accompanied by an EFUP5 page.



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## 878: Floating Rate Preferred Stock - % Type

- Like calc type 56, but used for issues denominated in Euro.
- Used for adjustable/floating-rate preferreds where the dividend is quoted in percent.
- Must be accompanied by an EFUP1 page.

## 884: Mexican Bondes

- Used for Mexican government IPAB floating rate bonds that pay a coupon every 28, 91 or 182 days.
- Discount Margin (Sobretasa) is calculated on a compound basis, using Act/360 discounting periods.
- Coupon payment dates are preceding business day adjusted.
- Coupon cash flows and accrued are calculated on an Act/360 basis on the adjusted period
- Coupon rates are determined as follows
  - Series IT- Mexico Treasuries 91 Day Cetes Auction Rate (GCETAA91 Index) for the applicable period
  - Series IM- The higher of the Mexico Treasuries 28 Day Cetes Auction Rate (GCETAA28 Index) or the Mexico Official Overnight Closing Cetes Rate (MXBRRP Index) for the applicable period.
  - Series IQ- The higher of the Mexico Treasuries 91 Day Cetes Auction Rate (GCETAA91Index) or the Mexico Official Overnight Closing Cetes Rate (MXBRRP Index) for the applicable period.
  - Series IS - The higher of the Mexico Treasuries 182 Day Cetes Auction Rate (GCETAA18Index) for applicable period or the percentage change in Mexico UDI inflation index (MXUDI Index) over the same period. Note the applicable Mexico Treasuries 182 Day Cetes Auction Rate will be applied as the current coupon from the beginning of the coupon period until Banco Mexico publishes the actual rate, which will occur after the percentage change in UDI for the period is known. At that point, if the percentage change in UDI is higher than the Cetes rate the current coupon will be adjusted. Otherwise it will remain the same. This follows Valmer methodology.
- Future projected coupon rates are calculated as follows
  - Series IT- The Mexican Cetes 91 Day reference yield, (CETRG091 Index) published by Valmer 1 day prior to the trade date.
  - Series IM- The higher of the Mexican Cetes 28 Day reference yield, (CETRG028 Index) published by Valmer or Mexico Official Overnight Closing Cetes Rate (MXBRRP Index) 1 day prior to the trade date.
  - Series IM- The higher of the Mexican Cetes 91 Day reference yield, (CETRG091 Index) published by Valmer or Mexico Official Overnight Closing Cetes Rate (MXBRRP Index) 1 day prior to the trade date.
  - Series IS - The Mexican Cetes 182 Day reference yield, (CETRG182 Index) published by Valmer 1 day prior to the trade date.
- Traded on a unit basis.



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- Settlement is T+0
- Users can adjust the trade date on YA independent of the settlement date to historical trades that are greater than T+0

## 897: Pakistan T-Bills

- Settlement period is T+0.
- Quoted on a yield basis and the price is calculated from the yield.
- Rounding is to four decimal places. Uses an ACT/365 day type.

## 899: Malaysia Fixed Rate and Zero Coupon Corporate Bonds

- No longer in use
- Used for semi-annual and annual payers.
- Rounding is to 2 decimal places.
- Uses an ACT/365 day count.

## 903: Sri Lanka T-Bills

- Calculates yields on a simple basis
- Price and yields are rounded to four decimals.
- Uses ACT/364 day count.
- T+2 settlement period.

## 906: Chilean Government PRCs (Pagares Reajutable Coupon)

- Used for fixed rate annuities with redemption and interest linked to Chilean inflation through Unidades de Fomento (CHUF Index).
- Yield is discounted on an annual basis using an ACT/365 day count.
- Price is Dirty in percentage form, unadjusted for the current sink factor. Therefore, total payment in CLP equals price \* current sink factor \* face \* current UF value.
- The payment invoice appears in both Chilean pesos (CLP) and Unidades de Fomento (CLF) by converting the CLF amounts into CLP.
- Coupon cash flows on a basis of 100 are calculated as:

$$CF = \text{Round}(X * Op / 100, 3)$$

Where

$$X = \text{Round}((1 + C)^{(D/360)} - 1) * Pf * Op, 2)$$

Op=Original Par

C=Annual coupon rate in decimal form

D=actual days in coupon period

Pf=principal factor

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- The par value is adjusted by the internal rate of return at issue of the bond (also known in Chile as 'TERA'), which is constant throughout the life of a bond and is independent of the price/yield calculation.
- Follows a T+0 settlement convention using CDR CL (Chile Calendar).

## 908: Chilean Government PRBCs (Pagares Reajustable Banco Central)

- No longer in use.
- Redemption linked to CPI.
- Issued in "Unidades de Fomento." Zero-coupon bond.
- Follows a T+0 settlement convention using CDR CL (Chile Calendar).

## 911: Malaysian Zero Coupon Cagamas Bonds

- Quoted on a discount basis.
- Settlement is T+1.
- Discount and yield are rounded three decimal places.
- There is no rounding for the price, although on YA <Go>, four decimal places appear.
- Accrued interest is rounded to the nearest cent. Uses an ACT/365 day count.

## 917: Singapore T-Bills

- Quoted on a discount to price basis.
- Price, yield, and discount are rounded to 3 decimal places.
- Uses an ACT/365 day count.
- Settlement period is T+1.
- Replaces calc type 354

## 926: Singapore Government Bonds

- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied
- Triggers a 3-business-day ex-dividend period.
- Accrued interest is rounded to 2 decimal places on cash amounts.
- Settlement period is T+1.

## 930: Sri Lanka Government Bonds

- No longer in use
- Rounding for price, yield and accrued interest is to two decimal places.
- Uses ACT/ACT day type.
- When settlement goes into the last coupon period, simple interest compounding is used.

# Bloomberg

- Settlement period is T+2.

## 934: Mexican Adjustabonos

- Coupon and redemption are linked to Mexican CPI (MWCPI Index).
- Used for Mexican bonds issued in their domestic currency.

## 937: Malaysia T-Bills

- Quoted on a discount basis.
- Settlement period is T+1, and discount and yield are rounded to three decimal places.
- There is no rounding for the price, although on YA <Go>, four decimal places appear.
- Accrued interest is rounded to the nearest cent. Uses an ACT/365 day count.
- When calc type is applied to Islamic CP (PGM ISCP <go>) or Islamic BA (PGM ISBA <go>), money market securities the label changes to Islamic Discount. However the calculation remains the same.

## 944: No Longer Being Used

- See calc type 1171 or 1172.
- Brazilian Floating Rate Bills (LFT and LBC) - Trade at premium or discount on the price that refers to an increase or decrease in the SELIC rate.
- The Central Bank of Brazil releases the premium/discount on an Annual Over basis (252 business days).
- The secondary market trades it on an overnight basis (over-the-counter). YA <Go> considers the secondary market convention.

## 946: Chilean Government PRDs (Pagares Reajustable Dolares)

- Issued in "Unidades de Fomento." Fixed-rate bond.
- Constant cash flow =  $((1 + \text{cpn}\%)^{\frac{1}{\text{freq}}}) - 1 \times 100$ . Cash settle.


## 952: Eonia Floaters

- Actuarial Margin Calculation Methodology.

*Note:* For further information on EONIA FRN: Actuarial Margin calculation methodology, enter DOCS 1146628 <Go>.

## 954: Fiji Government Bonds

- Uses an Act/Act day count
- Price and yield are rounded to 2 decimals

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- Accrued is rounded to 2 decimals on 100 par.
- Applies a 14 calendar day ex-dividend period.
- Settlement period is T+1.

## 962: Street Convention

- Yields are calculated on a compounded basis on the same frequency as the coupon frequency.
- Accrued interest, partial period cash flows and partial discount periods are calculated using ISDA ACT/ACT split accrual methodology. This means periods are calculated as days in a non-leap year / 365 + days in a leap year / 366
- Full periods are calculated 1 / coupon periods per year.
- Settlement defaults to T+3 but may be adjusted to the conventions of any individual bond.
- This calc is similar to calc 1297 however calc 1297 calculates all periods, both partial and full on and ISDA ACT/ACT split accrued method..

## 966: Floater AI

- Used for ACT/ACT floaters where price/discount margin can not be calculated accurately
- Calculates accrued interest using the same methodology to calc type 585,
- No other analytics are performed by this calc..
- BXT/SXT <Go> shows the accrued figures.
- Applies True ACT/ACT (ISMA), meaning that the denominator equals the number of days in the period.
- Can apply rounding conventions on domestic Italian bonds of 5 decimals on face of 100.

## 967: Taiwan Corporates

- Yields are calculated on an annual compounded basis, including the last period regardless of coupon frequency
- Prices and yields are unrounded.
- Day count is typically ACT/ACT or ACT/365.
- Invoice allows users to apply a 10% withholding tax on accrued
- Settlement is T+3.

## 971: Namibia Government Bonds

- Price and accrued interest are rounded to five decimals.
- Applies simple yield when settlement is in the last period.
- Applies a one-month ex-dividend period in accrued interest calculations.
- These securities are traded on a clean price basis.
- Uses an ACT/365 day count.
- Settlement convention is T+1.

# Bloomberg

## 977: T-BILL 2 DEC RND

- No Longer in use
- Yields are calculated on a simple yield convention and rounded to three decimals.
- Price is rounded to three decimals.

## 984: Namibia T-Bills

- No Longer in use. See Calc 990
- Calculates price to discount rate
- Price and equivalent yield are rounded to 5 decimals
- Discount are rounded to three decimal places.
- Settlement is T+1.

## 985: Australian Step-Up Floaters

- Used for Australian domestic floating rate bonds and preferreds that float off the Australian Bank Bill rates.
- Price/Discount Margin calculation defaults to yield to next call.
- Applies AFMA floating rate notes formula
- Future coupons are estimated as assumed rate + quoted margin
- Assumed rate is the interpolated rate to maturity off of the Bank Bill Swap Curve.
- Index to next fix is an interpolated rate to next refix off of the Bank Bill Swap Curve.
- To see the corresponding Bank Bill Swap Curve run ICVS1 to select the AUD vs. 3M,6M Bank Bills curve. Change the name to AUD FRN. Apply CMPT as PCS, and on the Curve Analysis tab confirm curve side is set to Mid or matches the users YAS Yield Curve default setting.
- Price rounds to four decimals and six decimals in the last period. Discount margin rounds to six decimals.
- Accrued interest is rounded to three decimals on 100 face.
- Accrued interest is calculated from previous pay date to settlement, even for preferred securities.
- Ex-dividend trading conventions apply. Ex-dividend dates for corporate bonds and OTC preferreds are reported on a settlement date basis. Exchange listed preferreds are reported on a trade date basis.
- For preferred securities the following functionality applies
  - BXT/SXT defaults to a net of franking invoice. Users can select the tax rate of company franking percentage or change to a gross values
  - YA includes a Net Traded Margin equivalent
  - Exchange listed preferreds apply dirty / cash prices and trade in units.
- For trade dates prior to March 7, 2016 settlement is T+3 and T+2 on or after.

# Bloomberg

## 990: Interest at Maturity

- Used for zero coupon bonds or bonds that pay their interest at maturity, but may have local conventions slightly different than street convention.
- This calc cannot be applied through PPCR1. However users can copy existing securities with this calc through PPCR2. This will carry over the local conventions applied to the source bond.
- When calc type is applied to short term negotiable instruments of deposit money market securities (PGM NID <go>), the label changes ST NID.

## 994: Indonesian T-Bills

- Yields are calculated on a simple basis and rounded to three decimals, labeled as Indonesian Discount Rate on YA
- Price is not rounded
- Uses ACT/360 or ACT/365 day count.
- Cash values on the invoice are rounded to the nearest Rupiah for IDR securities or two decimals on USD securities.
- BXT/SXT provides the option to see invoice total payment inclusive of tax
- Settlement period is T+3.

## 999: Street Convention

- Used on various coupon structures, Fixed, Floater, Variable, and Step Coupon.
- Used for securities with conventions that are similar street convention, but also apply some local conventions.
- This calc cannot be applied through PPCR1. However users can copy existing securities with this calc through PPCR2. This will carry over the local conventions applied to the source bond.
- When calc type is applied to zero coupon negotiable instruments of deposit money market securities (PGM NID <go>), the label changes Zero Cpn NID.

## 1007: Fltr - Split AI

- Used for floaters that follow ISDA ACT/ACT conventions. This means periods are calculated as days in a non-leap year / 365 + days in a leap year / 366
- Yields follow standard calc type 21 for floaters.
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.



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- For securities with caps the future projected coupons will be calculated at the cap if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) exceeds the cap. For securities with floors the future projected coupons will be calculated at the floor if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) is below the floor. However, in both cases, the future periods will still be discounted at the current assumed rate plus discount margin, and the first period will still be discounted at the current index to next refix plus discount margin.

## 1009: Fltr - Split AI Only

- Used for ISDA ACT/ACT floaters where price/discount margin can not be calculated accurately
- This means periods are calculated as days in a non-leap year / 365 + days in a leap year / 366
- Calculates accrued interest using the same methodology to calc type 1007.
- No other analytics are performed by this calc.
- BXT/SXT <Go> shows the accrued figures.

## 1010: Fix to Floater

- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods unless otherwise noted where local conventions apply
- Takes into account fixed rate period information as well as current benchmark rate information for the floater period.
- Callable issues default to yield to next call. Some structures may default to the fixed to float flip date if that date is different from the call.
- Sensitivity Analysis (i.e. Risk, Durations, Convexity) terminates at the end of the fixed period values
- For long dated maturities and perpetuals yield to maturity is calculated assuming a maximum of 150 years of cash flows or 600 total cash flows, principal and interest.
- Applies local conventions when used on the following:
  - Italian domestics. See calc 523 definition for conventions.
  - Malaysian domestics. See calc 1108 definition for conventions.
  - Australian domestics. See calc 23 definition for conventions.
  - HK\$ bonds. See calc 348 definition for conventions.
  - Canadian domestics. See calc 48 definition for conventions.
  - Japanese domestics. See calc 324 definition for conventions.
  - Samurai bonds. See calc 834 definition for conventions.
  - South African domestics. See calc 368 definition for conventions.
- On YA, Benchmark F mode applies a rate from the forward swap curve to calculate the assumed floating rate coupon.
- Benchmark C mode applies the latest known rate.

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- Securities that apply this calc are adjusted to a floating rate calc once the floating rate period is reached.
- Note: You cannot use calculation type 1010 in Private Security Update function (PRPL) or the Private Security Update function (PPCR).

## 1014: Turkish Government Bond - Fixed Rate

- Primary yield, defined by the ISE as "Simple" is periodic compounding, compounding on the same yearly frequency as payment frequency. Except in the last period, where it applies simple interest on an ACT/365 basis. This value is rounded to 2 decimals. However, users can change primary yield to annual compounding, defined by the ISE as "Compound", through COVR. Insert second bullet
- "Compound" yield is calculated as:  

$$(1 + \text{rounded simple yield} / \text{coupon frequency})^{\text{coupon frequency} - 1}$$
 in all periods except the last.

In the last period it is calculated as:

$$(1 + \text{rounded simple yield} * \text{days to maturity} / 365)^{(365 / \text{days to maturity}) - 1}$$
 compound yield is rounded to 2 decimals.

- Prices are clean as of June 2, 2008 (Prices are dirty historically through May, 2008).
- Prices are rounded to 3 decimals.
- Accrued interest is multiplied by the face amount, then rounded to two decimals.
- Coupons pay every 91, 182, or 364 days.
- Settlement follows standard Turkish domestic conventions of T+0 from 00:00-13:59 Istanbul time and T+1 from 14:00-23:59 Istanbul time.
- See COVR for Turkey Switch simple interest to compound? (Y/N). Users can change the primary yield calculation for all calc 1014 bonds through the toggle. N applies the default primary yield, periodic compounding. For fixed rate securities periodic compounding is described by the ISE as Simple. Y applies annual compounding as the primary yield. For fixed rate securities annual compounding is described by the ISE as Compound. This toggle also affects all calc 1530 bonds for Turkish zero coupon bonds.

## 1018: Turkish Government Bond - Floating Rate

- Valuation conventions treat these securities like a step, fixed coupon bond, meaning that the formula calculates a yield for a given price rather than a discount margin.
- The last refix is applied as the current coupon and the assumed rate plus spread is applied for future coupons.
- This assumed rate defaults to the current coupon value, however, users can change this assumption.
- Prices are clean effective June 2, 2008. (Prices are dirty historically through May, 2008).

# Bloomberg

- Prices are rounded to three decimals. Accrued interest is multiplied by face amount, then rounded to two decimals.
- Coupons pay every 182 and 364 days.
- YA displays a Discount Margin equivalent. Future cashflows the DM assumed coupon which is current benchmark + QM. This can be adjusted and is located on next to the Discount margin label. (Assumed Coupon at the top of YA does not affect this calculation).
- YA for bonds linked to 91 or 182 reference T-bill yield displays a Zero curve discount margin equivalent, Z-DM. Forward discount rates are projected using curve S164.
- Settlement follows standard Turkish domestic conventions of T+0 from 00:00-13:59 Istanbul time and T+1 from 14:00-23:59 Istanbul time.

## 1022: Money Market Loans

- No longer in use.

## 1023: Mexican Fixed Rate Bonds

- Used for Mexico and other day paying frequency bonds.
- Coupon frequency is on a day pay basis (7, 14, 28, 91, 182, 364 days).
- Coupon payments and discounting periods are calculated on an Act/360 or Act/365 basis depending on the day count of the bond.
- Coupon payment dates are bumped off of non-payment dates. Some dates can be bumped forward, others are bumped back depending on the structure
- Coupons for ticker MBONO bonds are only paid on Thursdays so short and long periods are possible.
- For ticker MBONO prices and accrued interest are rounded to 8 decimals on 100 par.

## 1025: South African Government Index Linked Bonds

- Used for South African bonds linked to South Africa CPI (SAPCI Index).
- Yields are calculated on a semi-annual compound basis discounted using an ACT/ACT day count except in the last period, where it applies simple yield.
- Leap year is included in accrued, and for any bond that pays on February 28, payment does not roll to February 29.
- Reference CPI is calculated as the interpolated value of CPI for 3 and 4 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date. CPI values prior to January 2009 are adjusted so that the resulting applicable reference CPI, base CPI and index ratios are consistent with values calculated prior to the 2008 rebasing.
- Standard period cash flows are calculated as coupon / coupon frequency \* face. Broken periods are calculated on an ACT/365 basis. Meaning short coupon period cash flows are calculated as days in period / 365 \* coupon \* face. Long first periods are calculated as ((days from settle to quasi first coupon date) / (365/ coupon frequency) + 1) \* (coupon / coupon frequency) \* face.
- Accrued interest is calculated on an ACT/365 basis and rounded to five decimal places before being multiplied by the index ratio.

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- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- The ex-dividend period is 10 calendar days prior to coupon payment for government bonds.
- Prices are clean, exclusive of inflation, therefore, total payment equals price \* accrued \* index ratio \* face. FPA & BSR allow for BESA methodology
- FPA & BSR allow for BESA methodology
- Settlement is T+3.
- Principal minimum redemption value is 100% of nominal value.
- Equivalent to nominal bond calc type 368.

## 1029: Spanish Government Bond

- Used for Spanish domestic governments, agencies, regions, and strips.
- Calculates yields on an annual compound basis for all periods including when settling in the last period.
- For long first coupons discount periods for the long firsts are calculated as days remaining in period / year basis. Where year basis equals 366 if Feb 29 in the period starting from one year prior to the coupon payment up to and including the coupon payment date, otherwise 365
- When the maturity date falls on a non-business day, for discounting purposes the maturity date is bumped to the next business day and the last period is calculated days in the adjusted period / days in the standard period. Accrued and cash flow amount are not adjusted.
- For long first coupons, coupon cash flows are calculated as days in period / year basis. Where year basis equals 366 if Feb 29 is included in the period, otherwise 365. The coupon amount is rounded to 5 decimals on 1000 par.
- Accrued interest is calculated on an ACT/ACT basis. For long first coupons accrued interest is calculated using the rounded coupon payment.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.

## 1030: Spanish Multi-Coupon Bond

- Used for Spanish domestic multi-coupon bonds when all rates are known at the time of issue.
- Calculates yield to maturity equal to true yield if the maturity date falls on a weekend.
- This calc type will also take into account the day count on the bond and not assume ACT/ACT.
- (Some multi-coupon bonds are issued with a 30/360 day count). Requires an EFUP3 page.
- YA can be used to view the scheduled pay dates and amounts.
- Triggers a T+5 settlement period.

# Bloomberg

## 1031: Thailand Floaters w/Floors

- Used on Thai floaters that have a floor coupon rate to a certain date. They have an ex-dividend period and settle T+3.
- Note: Not available for PPCR <Go> (Private Placement Update or PRPL <Go> (Private Security Update).

## 1033: Japanese Government Floater and When Issued Floater Bonds

- Used for 15-year Japanese government floater bonds when issued floater bonds that have rates based on the most recent auctioned JGB 10 year base yield less Spread (JGBY10YR <INDEX>).
- Short first coupons are calculated using the BOJ formula of  $\text{face} * \text{annual coupon} / \text{coupon frequency} * (1 / \text{coupon frequency} - (\text{days in a standard period} - \text{days in short period}) / (365 / \text{coupon frequency}))$ . These types of securities are issued to retail investors.
- Yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after.
- Prior to November 2015 coupon payments applied a five business days trade suspension period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen

- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 1038: Bulgaria Government Bonds

- Yields are compounded on the same frequency as the coupon frequency and rounded to 3 decimals.
- Cash flows in the discount formula are assumed to be  $\text{coupon} / \text{coupon Freq} * \text{face}$ .
- Prices are clean and rounded to 3 decimals.



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- Cash flows and accrued interest are calculated on an ACT/ACT basis where the period is days in period / Year basis. Year basis can be 365 or 366. The method of determining which value to apply is as follows:
  - If the payment date falls in up to and including the end date of a standard year, then apply the days in that standard year as the year basis.
  - A standard year is determined by taking maturity date of the security, which would be your end date, and counting back to the same month and day of the previous year, which would be your start date. Then the year basis for any payment that occurred in that period or on the end date would be the number of days in that year, either 365 or 366. The start date for that standard year would be the end date of the previous standard year. Follow the same process to determine previous standard years.

Example 1 - BG2040007218, maturity date 01/10/2017 therefore the standard year would be from 1/10 to 1/10 of the previous year. For the 1/10/12 and 7/10/11 payment dates the number of days to apply as the basis would be determined as the difference between [01/10/2012] & [01/10/2011] i.e. 365 days. This basis should be applied to the accrued interest calculation for those periods as well as the cash flows displayed on CSHF.

Example 2 - BG2040007218, maturity date 01/10/2017 therefore the standard year would be from 1/10 to 1/10 of the previous year. For the 1/10/13 and 7/10/12 payment dates the number of days to apply as the basis would be determined as the difference between [01/10/2013] & [01/10/2012] i.e. 366 days. This basis should be applied to the accrued interest calculation for those periods as well as the cash flows that displayed on CSHF.

## 1042: Icelandic Inflation Linked Bonds

- Interest and principal are adjusted for the Icelandic Consumer Price Index (ICCPi <INDEX>).
- Used for four types of securities, each having their own structure or conventions:
  - Iceland Government Bonds that are zero coupon or pay at maturity. These securities are found under the ticker ICEGB <CORP>. Corporate bonds are also issued in this structure. Principal and accumulated coupons are paid at maturity. Bonds are priced on a dirty basis, meaning the price is inclusive of accrued and inflation.  $\text{Net Amount} = \text{Price} * \text{Face}$ . Reference CPI is calculated on a 30/360 basis.
  - Iceland Government Bonds that pay a fixed rate linked to inflation on a periodic basis. These securities are found under the ticker ICEGB <CORP>. These bonds are bullets and priced on a clean basis, meaning the price is exclusive of accrued, principal factor (balance), and inflation.  $\text{Net Amount} = \text{Price} * \text{Face} * \text{Inflation}$ . Reference CPI is calculated on an ACT/ACT basis.
  - HFF Annuity bonds - These securities are found under the ticker ICEHB <CORP>. They are issued into the Eurobond market. Principal and interest are paid in equal installments throughout the life of the bond. Bonds are priced on a clean basis, meaning the price is exclusive of accrued, principal factor (balance), and inflation.  $\text{Net Amount} = \text{Price} * \text{Inflation} * \text{Principal Factor} + \text{Accrued}$ . Reference CPI is calculated on a 30/360 basis.



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- IBN Housing Authority bonds - These securities are found under the ticker ICEHB <CORP>. They are issued in the domestic market. Principal and interest are paid in equal installments throughout the life of the bond (annuity). Bonds are priced on an all-in basis. The price is inclusive of accrued, principal factor (balance), and inflation. Net Amount = Price \* Face. Reference CPI is calculated on a 30/360 basis.
- Corporate bonds with bullet structures - Bonds are priced on a dirty basis, meaning the price is inclusive of accrued and inflation. Net Amount = Price \* Face.

## 1063: Thai Floaters Long Last

- Used for Thai floater where the maturity date lands on a non-business day. The last cash flow date is bumped to a valid business day and the coupon amount is adjusted to include the extra day(s). Standard Thai Floaters use Calc 1031.

## 1065: Thai Floaters Short First, Long Last

- Used for Thai floater where the first period is shorter than a standard period and the maturity date lands on a non-business day.
- The last cash flow date is bumped to a valid business day and the coupon amount is adjusted to include the extra day(s).
- Standard Thai Floaters use Calc 1031.
- 

## 1070: Mexican Bondes LD (Bonos de Desarrollo del Gobierno Federal)

- Used for floating government bonds quoted in a premium (sobretasa) over the benchmark.
- The coupon rate is calculated using the official 28-day Mexican banking rate MXBRBA Index as a benchmark.
- The coupon is paid every 28 days.
- If the pay date is on a holiday, cash flows are moved forward to the next applicable business day.
- The accrued rate represents the accumulation of the index rate on a daily basis from the start of the period to the last known index rate date (Day before trade date).

Formula is:

$$TCdev = \left\{ \prod_{i=1}^d \left( 1 + \frac{r_i}{36000} \right) - 1 \right\} \frac{36000}{d}$$

Where:

$d$  = Days from period start to date to day before trade date

$r_i$  = Applicable index rate for that day

- To display the accumulation of rates within a coupon period, from YA enter <PAGE FWD>.
- Interest is accrued on an ACT/360 day count basis rounded to 6 decimals.

Formula Is:

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$$I_{dev} = VN * \frac{d * TC_{dev}}{36000}$$

Where:

VN = face

d = accrued days

- Current coupon rate is calculated using the following formula:

$$TC_1 = \left[ \left( 1 + TC_{dev} * d / 36000 \right) * \left( 1 + \frac{r}{36000} \right)^{dp-d} - 1 \right] * (36000 / dp)$$

Where:

d = accrued days

dp = days in period

r = latest known rate (one day prior to trade)

- Next coupon amount is calculated using the following formula:

$$C_1 = VN * TC_1 * dp / 36000$$

- Future coupon amounts are calculated using the following formula:

$$C_i = VN * \left( 1 + \frac{r}{36000} \right)^{dp}$$

- Yield is calculated on an annual compound basis using an Act/360 day count and rounded to 6 decimals.
- Settlement = T+0 however YA allows user to override trade date for a given settlement. This will adjust the last known index rate from the default settlement period.

## 1076: Taiwan T-Bill/C.P.

- Discount securities are quoted by discount rate in the primary market.
- In the secondary market they are quoted in terms of simple yield.
- Price is quoted per NT\$ 10,000 and is rounded to two decimal places.
- Day count is ACT/365 and settlement is T+1.

## 1084: South Korea Compound/Simple Interest

- Currently used for the Seoul Metro City Railroad Bonds with a maturity length of nine years. This type of security has a pro-rata sinking fund.
- The coupon is compounded annually for the first five years with the interest paid once at the fifth anniversary of the coupon date.
- Simple interest is then computed for the next four years and paid out annually.
- Day type is ACT/ACT and settlement is T+1.

# Bloomberg

## 1088: South Korea Compound/Simple Interest

- Currently used for the Seoul Metro City Railroad Bonds with a maturity length of seven years.
- These securities are bullet issues.
- The interest is compounded annually for the first five years and then simple interest is computed for the remaining two years.
- All interest is paid at maturity.
- Day type is ACT/ACT.
- Settlement is T+1.

## 1092: Singapore Corp Bonds

- Used for Singapore corporate bonds.
- Coupon payments are adjusted to the number of days in the period on an ACT/365 basis.
- Yields are also computed on ACT/365.
- Triggers a 7 business days ex-div period.
- No rounding applies to price, yield, and accrued interest.
- Accrued interest in the first period is calculated from interest accrual date to settlement, inclusive of both dates.

## 1098: Capitalizing Bonds

- **This calc is no longer in use.**
- Used for Argentina 2018 and 2031 bonds.
- Modeled similarly to the Brazil C bond (calc type 591), the interest accrued until June 2006 is paid S/A as additional principal.
- The issue is traded based on the adjusted principal amount (original principal amount plus subsequent capitalizations), and the aggregate purchase price is calculated based upon the agreed price and the adjusted principal amount.

## 1103: Euro I/L: Street

- Used for European sovereign and corporate bonds linked to unrevised Euro-zone inflation, excluding tobacco (CPTFEMU Index).
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency, including the last period.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.

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- Prices are clean, exclusive of inflation, therefore total payment equals (price/100 + accrued) \* index ratio \* face.
- Accrued = Unadjusted Coupon / coupon frequency \* (# of days accrued/# of days in period) = X [round to Y decimals], X \* nominal value \* index ratio.
- For accrued values before inflation is applied, French OATe round to the 7<sup>th</sup> decimal place; Greek domestics round to the 3<sup>rd</sup> decimal place.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Defaults to T+2 settlement for trade date on and after Oct 6 2014, T+3 for prior date.
- Principal minimum redemption value is 100% of nominal value

## 1108: Malaysia Corp and Cagamas

- Used for Malaysian corporate and Cagamas fixed rate bonds issued after July 24, 1999.
- Yields are calculated assuming standard periods, unadjusted coupon amounts and dates falling on the day of the month of the maturity date (or other workout date).
- Yield round to 3 decimals.
- Prices for percentage-priced securities they are rounded to 3 decimals and cash-priced securities are rounded to 4.
- This calc handles both ACT/365 & ACT/ACT day counts and both standard and Islamic structures. These variables affect the coupon cash flows, payment dates and resulting accrued interest conventions. Each type is described below.
- BNM Equivalent yield appears on YA & BXT. This yield may be calculated assuming cash flow amounts and discount periods derived from payment dates adjusted off of non-business days. See descriptions below for specifics of each type.

### ACT/ACT

#### - Standard

- Coupon cash flows = number of days in the adjusted period / number of days in the unadjusted period \* coupon/coupon frequency
- Accrued interest = number of days from previous adjusted coupon date to settlement / days in adjusted period \* coupon /coupon frequency
- Discounting periods for BNM yield = number of days from settle or previous adjusted coupon date to next adjusted coupon date / number of days in the notional period

#### o Islamic

- Coupon cash flows for standard periods (non-odd) = coupon/ coupon frequency

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- Coupon cash flows for short first or last coupons = number of days in the unadjusted period / number of days in the notional period \* coupon / coupon frequency
- Discounting periods for BNM yield = number of days from settle or previous adjusted coupon date to next adjusted coupon date / number of days in the notional period.

## ACT/365 (both standard and Islamic)

- Coupon cash flows = number of days in the adjusted period/365 \* coupon
- Accrued interest = number of days from previous adjusted coupon date to settlement / 365 \* coupon
- Discounting periods for BNM yield = number of days from settle date to the adjusted coupon date / (365/coupon frequency)

## 1117: Venezuela DPNs

- Used for Venezuelan government floating rate notes that are based on the TAM rate (VTAM <INDEX>).
- Price and Yield calculations are the same as calc type 21.
- Default settlement is T+0.

## 1121: Capitalizing Bonds

- **This calc is no longer in use**
- Similar to calc type 1098, but this calculation type is designed for flat trading securities.

## 1126: Israel Government Fixed Rate Bonds

- Used for Israel fixed rate bonds
- Prices are dirty.
- Yields are calculated on an annual compounding ACT/365 basis.
- Accrued interest is rounded to 5 decimals on 100 par and applies ex-dividend conventions. It is displayed on invoices for informational purposes only.
- Settlement is T+1 off of CDR I7, Israel Banking Holiday.

## ▪ Government bonds

Coupon dates occur the last business day of the month.

Although settlement is T+1 the value date applied for determining time in the present value formula is T+0.

Shahars:

# Bloomberg

Ex-dividend dates occur the 20th day of every payment month bumped to the next business day if it 20th is a non-business day.

Coupons are calculated on a compound basis on an ACT/365 day count rounded to 5 decimals on 100 par. See formula below

Government bonds in ticker ILGOV:

Ex-dividend dates occur the 21st day of every payment month.

Coupons are calculated on a linear basis on an ACT/365 day count rounded to 5 decimals on 100 par. See formula below

## ▪ Corporate bonds

Coupon payment dates may vary. If payment date falls on a weekend or public holiday then it bumps forward. Discounting period would be adjusted accordingly. However coupon payment values are not affected

Standard coupon payments are calculated as coupon / coupon frequency.

Odd coupons are calculated on a linear basis. See formula below

For sinking fund bonds coupon cash flow is  $C * \text{adjusted principal factor}$  rounded to 5 decimals

Adjusted principal factor = the sum of remaining sinks from pay date to maturity/ sum of total remain sinks from current settlement to maturity

For sinking fund bonds principal cash flows are calculated as  $100 * \text{adjusted principal factor}$  rounded to 5 decimals.

Yield to worst defaults to yield to average life on sinking fund bonds

## ▪ Interest is calculated as follows:

Coupon calculations:

Compounded:  $C = 100 * (((1 + R)^{(T/365)}) - 1)$

Linear:  $C = 100 * R * T/365$

Where:

R= annual coupon rate in decimal form



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T = actual days in period

C = cash coupon on 100 par rounded 5 decimals

Accrued interest calculations:

$$AI = \text{Face}/100 * Y$$

$$Y = C * D/T$$

Where:

AI = Accrued Interest

D = accrued days

T = actual days in period

C = cash coupon on 100 par rounded 5 decimals

Y = cash accrued on 100 par rounded 5 decimals

## 1135: Kangaroo Floaters


- Used for Australian floating rate kangaroo notes that are based on the Australian Bank Bill rates (BBSW <INDEX>).
- Rate to next fix is an interpolated value off of the BBSW curve.
- Assumed rate defaults BBSW mid-rate. Price, discount margin, and accrued interest round to four decimals.
- Ex-dividend trading conventions apply.
- Default settlement is T+3.

## 1137: Poland Floaters

- Used for Polish government floating-rate notes.
- For issues using day types of {xxx}/ACT, the BLOOMBERG PROFESSIONAL® service uses a denominator of 366 when the current period ends in a leap year.
- Settlement is T+2.
- Accrued interest is calculated on a nominal 1000 Zloty face amount and rounded to two decimal places.
- Bonds trade using an ex-dividend that varies depending on the issue date (latest issues use a 2-days ex-div period). Bonds trade on the clean price, but during the ex-div, prices are adjusted by the market to include negative accrued interest. For that reason, to avoid double adjustment in the period, a value of 0 appears in the Accrued Interest field.

## 1139: Fixed Rate Indian Corporate Bonds

- Used for Indian corporate bonds.

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- The yield is calculated on an Act/365 annual compound basis regardless of coupon frequency or day count of the bond. The last period is calculated on a simple yield basis. Price and Yields are rounded to four decimals.
- YA displays an XIRR yield equivalent, which is annual compounding using an ACT/365 day count. YA also displays a day count equivalent, meaning it discounts cash flows on an annual frequency on the day count basis of the bond.
- Applies ex-dividend conventions, ex-dividend periods may vary. This means that when settlement occurs in an ex period, the current period's cash flow will be excluded from the present value and the accrued will be a negative value.
- Applies ex-draw conventions on sinking fund bonds. This means that when settlement occurs in an ex period, the negative accrued will be adjusted by the factored applicable at the end of the period.
- The Primary ACT/ACT convention is Days in Period / 366, if February 29th is included in the period, and Days in Period / 365 if not. However, it is also used for other ACT/ACT conventions including ACT/ACT ISMA with ACT/ACT defined as Days/365 if the end date occurs in a non-leap year, and Days/366 if the end date occurs in a leap year.
- For Indian Railway Finance bonds (INRCIN), the short last period coupon cash flows are calculated as standard period cash flow - short first period cash flow.
- Securities issued after December 2013 follow SEBI conventions, meaning pay dates are bumped to the next business day if the standard pay date falls on a non-business day (weekend or holiday). Maturity will bump back to the previous business day. The coupon cash flow amount is adjusted for the period. Depending on the individual bond Saturday is considered a business day for others it is not.

## 1143: Italian I/L Bond

- Used for Italian domestic bonds linked to unrevised Euro-zone inflation, excluding tobacco (CPTFEMU Index).
- Yield convention is annual compounding, and bumps cashflows off of non-business day on a modified following basis.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, in percentage form, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- $\text{Accrued} = (100 * (\text{Annual Interest Rate in decimal form} / \text{Payment Frequency})) * (\text{number of days accrued} / \text{number of days in period}) = x$  [round to 5 decimals], then  $((\text{nominal value}/100) * x) * \text{index ratio}$ .
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.

# Bloomberg

- Principal minimum redemption value is 100% of nominal value.
- Equivalent to nominal calc type 523.

## 1147: Italian I/L Corporate Bond

- Used for bonds linked to the inflation rate of the Italy CPI FOI excluding tobacco, (ITCPIUNRV Index).
- Yield convention is annual compounding, and bumps cashflows off of non-business day on a modified following basis.
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, in percentage form, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- Accrued =  $(100 * (\text{Annual Interest Rate in decimal form} / \text{Payment Frequency})) * (\text{number of days accrued} / \text{number of days in period}) = x$  [round to 5 decimals], then  $((\text{nominal value}/100) * x) * \text{index ratio}$ .
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.
- Principal minimum redemption value is 100% of nominal value.
- Equivalent to nominal calc type 523.

## 1151: Russia: Reg. Payer

- Used for Russian domestic fixed or multi-coupon bonds listed on MICEX.
- The coupon payment dates are the same day throughout the life of the bond. For example, payments made on the seventh of each quarter for the life of the bond.
- Yields are compounded on an annual basis
- Price and yield are rounded to two decimal places.
- Accrued interest is rounded to 2 decimals on 1000 par before being multiplied by face amount. However, the methodology is slightly different between City of Moscow bonds (MOSCOW Corp) and corporate securities.

Moscow bond accrued formula:

periodic coupon =  $\text{annual coupon rate} * \text{days in period} / 365 * 1000 * \text{principal factor}$  rounded to 2 decimals

accrued interest =  $\text{periodic coupon} * \text{accrued days} / \text{days in period}$  rounded to 2 decimals

Corporate bond accrued formula:

accrued interest =  $\text{annual coupon rate} * \text{accrued days} / 365 * 1000 * \text{principal factor}$  rounded to 2 decimals

# Bloomberg

- The yield to worst calculations default to the next workout date of put, call or maturity regardless of input price. However this calculation can be data driven via a yield schedule. The yield schedule appears on the Description function (DES), if applicable.
- The yield schedule is setup to follow the security's market conventions in regards to how the bond is to be priced over time.
- Example 1:

<u>Date</u>	<u>Yield Flag</u>
2/16/05	Yield to Average Life at Maturity with Par Sinks.
5/18/15	Yield to Maturity.

This bond would do price/yield calculations to average with Par Sinks until 5/18/15 and to maturity thereafter.

- Example 2:

<u>Date</u>	<u>Yield Flag</u>
11/15/05	Yield to Next Put.
11/13/07	Yield to Average Life at Maturity with Par Sinks.
08/11/09	Yield to Maturity.

This bond would do price/yield calculations to Next Put Date until 11/13/07, followed by yield to average life with par sinks until 08/11/09 and to maturity thereafter.

Sample Securities: ED8177096 <CORP>, EF172893 <CORP>.

## 1155: Russia: 91/182-Pay

- Used for Russian domestic fixed or multi-coupon bonds listed on MICEX.
- The coupon pay dates are either 91 or 182 days apart.
- Yields are compounded on an annual basis
- The discount day type is typically Act/365, however for Tatfondbank bonds, (ticker TATFRU), the basis changes to Act/366 if settlement occurs in a leap year
- Price, yield are rounded to two decimal places.
- Coupon cash flows are typically calculated on an Act/365, however for Tatfondbank bonds, (ticker TATFRU), the basis changes to Act/366 for payments that occur in a leap year.
- Accrued interest is rounded to 2 decimals on 1000 par before being multiplied by face amount. However, the methodology is slightly different between government and corporate securities.

Government bond accrued formula:

periodic coupon = annual coupon rate \* days in period /365 \*1000 \* principal factor rounded to 2 decimals

accrued interest = periodic coupon \* accrued days /days in period rounded to 2 decimals

# Bloomberg

Corporate bond accrued formula:

accrued interest = annual coupon rate \* accrued days /365 \* 1000 \* principal factor rounded to 2 decimals

Tatfondbank bond accrued formula, (ticker TATFRU):

accrued interest = annual coupon rate \* accrued days /basis \* 1000 \* principal factor rounded to 2 decimals

basis= 366 if settlement occurs in a leap year, otherwise 365

- The yield to worst calculations default to the next workout date of put, call or maturity regardless of input price. However this calculation can be data driven via a yield schedule. The yield schedule appears on the Description function (DES), if applicable..
- The yield schedule is setup to follow the security's market conventions in regards to how the bond is to be priced over time.
- Example 1:

<u>Date</u>	<u>Yield Flag</u>
2/16/05	Yield to Average Life at Maturity with Par Sinks.
5/18/15	Yield to Maturity.

This bond would do price/yield calculations to average with Par Sinks until 5/18/15 and to maturity thereafter.

- Example 2:

<u>Date</u>	<u>Yield Flag</u>
9/12/06	Yield to Next Put
9/8/09	Yield to Average Life at Put with Par Sinks
3/8/11	Yield to Maturity

This bond would do price/yield calculations to Next Put Date until 9/8/09, followed by yield to average life with par sinks until 3/8/11 and to maturity thereafter.

Sample Securities: ED8177096 <CORP>, EF6880431 <CORP>.

- For ticker RFLB applies T+0 settlement for trade dates previous to 6/1/15 and T+1 after. Corps apply T+0 settlement.

## 1159: Floating Rate Notes

- Used for ACT/ACT floating rate securities.

# Bloomberg

- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Assumes future cash flows are based on a flat rate calculated as assumed index plus quoted margin, or assumed index \* factor on leveraged structures.
- For securities with caps the future projected coupons will be calculated at the cap if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) exceeds the cap. For securities with floors the future projected coupons will be calculated at the floor if the assumed index plus quoted margin (or assumed index \* factor on leveraged structures) is below the floor. However, in both cases, the future periods will still be discounted at the current assumed rate plus discount margin, and the first period will still be discounted at the current index to next refix plus discount margin.
- Applies 366 days as the day count basis if either the start date or end date of the period occurs in a leap year. Otherwise, it applies 365 days.
- For trade dates when the first coupon rate is not known, for standard length first periods future coupon rates are estimated as assumed rate +/- quoted margin. For odd first periods (long or short) future coupons are estimated as index to next +/- quoted margin. Note: the rate used to estimate future coupon rates needs to be the same rate used in discounting the cash flows in order for price to equal 100 when quoted margin equals discount margin on first settlement.

## 1161: South Korean Floater

- Used for Korean floating rate securities that feature the same conventions as calc type 768.
- Assuming that the rate that appears on the Yield Analysis function (YA) uses the benchmark index of Trade day - 1, if the coupon payment date falls on a Saturday for Floating Rate Korea Treasury Bonds issued by the Ministry of Strategy and Finance (MOSF), the date is moved back to the previous business date according to the South Korean calendar.

## 1164: South Korean Floater

- Used for Korean inverse floating rate securities that follow same conventions as CALC type 768.

## 1167: Australia Resetting Convertible Preferred Security (Percentage Priced)

- Used for resetting convertible preferred securities. Dividends are adjusted for the number of days in the period and grossed up according to the franking percentage.
- Price to yield calculations can be carried out on the basis of franked, un-franked, or partially franked dividends.
- The conversion price is derived from the volume weighted average price (VWAP).
- The shares received upon conversion are subject to a maximum and minimum.

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- The number of additional shares allotted upon conversion of the securities is determined according to the conversion discount.

## 1169: Australia Resetting Convertible Preferred Security (Cash Priced)

- Used for resetting convertible preferred securities. Dividends are adjusted for the number of days in the period and grossed up according to the franking percentage.
- Price to yield calculations can be carried out on the basis of franked, un-franked, or partially franked dividends.
- The conversion price is derived from the volume weighted average price (VWAP).
- The shares received upon conversion are subject to a maximum and minimum.
- The number of additional shares allotted upon conversion of the securities is determined according to the conversion discount.

## 1171: Brazilian Floating Rate Bills (Replaces Calc Type 944)

- LFT (Annual Over) - LFT is a floating-rate bill that trades at a discount or a premium over the effective Selic rate.
- These securities do not pay coupon, but instead have their principal amount updated daily by the accumulation of the Selic rate on a daily basis.
- Yield, labeled as Annual Over on YA, is calculated on an annual compound basis using a BD/252 day count, rounded to 4 decimals.
- Points of over is calculated as follows:  $[(1 + \text{Annual Over}/100)^{(1/252)} - 1] * 30$
- Price is expressed in cash terms on a unit basis
- Percentage price, labeled as Market Quote on YA, is truncated to 4 decimals.
- Unit price is accumulated SELIC value, truncated to 9 decimals \* percentage price / 100 rounded to 6 decimals
- BZBBSELC Index represents the daily accumulated value of SELIC rounded to 16 decimals
- BZSELICA Index represents the daily SELIC rate
- For settlement where the effective accumulated SELIC value is not known (T+1 from today or greater), the value is estimated as:
- Latest accumulated SELIC \*  $((\text{ROUND}(((1 + (\text{Latest SELIC Rate}/100))^{(1/252)}) - 1, 8) + 1)^{(\text{business days from latest accumulated SELIC rate to settlement})})$
- Adjust par or PU 238 represents par \* the daily accumulated value of SELIC at the time of settlement.
- DV01 is expressed in cash terms.
- CSHF displays estimated cash flow assuming the last known accumulated SELIC.
- Settlement is T+3

# Bloomberg

## 1172: Brazilian Floating Rate Bills (Replaced Calc Type 944)

- LFT (Points of Over) - Trade at premium or discount on the price that refers to an increase or decrease in the SELIC rate.
- The Central Bank of Brazil releases the premium/discount on an Annual Over Basis (252 business days).
- The secondary market trades it on an overnight basis (over-the-counter). YA <Go> considers the secondary market convention.
- If the pricing contributors send the Points of Over, the default calc type is 1172.

## 1173: Japanese Government CPI Linked Bonds (Simple Yield)

- Used for Japanese Government Consumer Price Index Bonds (JGBI <GOVT>).
- Linked to the Japanese CPI excluding fresh foods, adjusted for 2010 rebasing (JCPNGENF <INDEX>).
- Primary yields are calculated on a simple basis, however YAS/YA also display compound yield.
- Simple and compound yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- For securities issued from April 2016 index ratio is rounded to 5 decimals, and rounded to 3 decimals for those issued prior.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- CPI cycle starts from the 10th of the month.
- Prices are clean, in percentage form, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after.
- Principal is not deflation protected up to 2008 issuance (series 1-16). From October 2013 issue (series 17), principal is deflation protected at 100%.
- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- Prior to November 2015 coupon payments applied a five business days trade suspension period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$

Accrued Interest:  $\text{Face} / 100 * \text{Index Ratio} * X$ , truncate decimals to 1 yen

# Bloomberg

- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Equivalent to nominal calc type 51.
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 1174: When Issued Japanese Government CPI Linked Bonds (Compound Yield)

- Used for When Issued Japanese Government Consumer Price Index Bonds (WIJI <GOVT>).
- Linked to the Japanese CPI, excluding fresh foods (JCPNGENF <INDEX>).
- Primary yields are calculated on a semi-annual compound basis
- Yields are calculated on an NL/365 basis when period from settle to maturity is greater or equal to one calendar year. The day count changes to Act/365 when this period is less than one calendar year. To clarify, when settle falls on 2/29, it is always included as one day, regardless of time to maturity. When maturity falls of 2/29 and time to maturity is greater than one calendar year, then it needs to be excluded as a day.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- For securities issued from April 2016 index ratio is rounded to 5 decimals, and rounded to 3 decimals for those issued prior.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- CPI cycle starts from the 10th of the month.
- Prices are clean, in percentage form, exclusive of inflation, therefore total payment equals (price/100 + accrued) \* index ratio \* face.
- For trade dates prior to April 23, 2012 settlement is T+3 and T+2 on or after..
- Principal is not deflation protected up to 2008 issuance (series 1-16). From October 2013 issue (series 17), principal is deflation protected at 100%.
- When a coupon date falls on non-business day, payment will be made next business day with no amount adjustment. CSHF will show unadjusted dates.
- Prior to November 2015 coupon payments applied a five business days trade suspension period.
- Accrued is calculated on an Act/365 basis therefore includes February 29 when counting days.
- The accrued interest factor is truncated and calculated as follows:

Accrued Interest Factor (X):

$$100 * (\text{Coupon}) * (\text{Days Held} / 365) = Y$$

Y is truncated after 7 decimal places to result in X. For example, if Y = 0.123456789, X = 0.1234567, not 0.1234568

Accrued Interest: Face/100 \* Index Ratio \* X, truncate decimals to 1 yen

# Bloomberg

- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Equivalent to nominal calc type 52.
- For settlements that occur in coupon periods prior to a period that includes January 1, 2016 BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 1178: Danish Inflation-Linked Bonds

- Used for Danish sovereign and corporate bonds linked to Denmark CPI (DNCPINew Index)
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency.
- Price is exclusive of inflation.
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- For settlements prior to 3/1/16 the 2000 base CPI is used to calculate, base CPI, reference CPI and the resulting index ratio, DNCPOLD Index. For settlements on 3/1/16 or after, the Danish government bond, EJ2043929 Govt, applies the rounded base CPI adjusted for the 2015 rebasing as published by NASDAQ OMX. Corporate securities apply an unrounded base CPI adjusted for the 2015 rebasing. All securities apply the current CPI values for settlements on 3/1/16 or after as reference CPI, DNCPINew Index.
- Prices are clean, exclusive of inflation, therefore total payment equals price \* accrued \* index ratio \* face.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1.
- Yield beta can be overridden on COVR.
- No coupon deflation protection.
- Minimum principal redemption 100% of nominal par.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.

## 1188: EONIA Index linked CD

- No longer in use.
- Superseded by calc type 1307.

## 1189: Vietnam Government Bonds - Pre-Paid Vietnam Government Bonds

- Used for bonds where the coupon is paid at the start date of the period
- Yield calculations follow Hanoi Stock Exchange formula provided in Decision 55
- Applies a 6 business day ex-dividend period
- Accrued Calculations are as follows
  - Settling with entitlement
    - $\text{Accrued} = Cx \times x - 1$
    - $Cx = MG \times Rc \times Dn/E$
  - Settling without entitlement (ex-dividend)

# Bloomberg

- $\text{Accrued} = (\text{Cx} + \text{MG} \times \text{Rc}) \times -1$

Where:

MG = par amount of 1 bond (100,000)

Rc = Annual coupon / coupon frequency

Dn = number of days from settle to next coupon date

E = number of days in coupon period

- Settlement is T+1

## 1193: Brazil ILB - Brazil Inflation Linked Securities

- Used on NTN-B bonds linked to BZCLVLUE <INDEX>.
- Periods for all calculations are based on the number of business days in the period, according to the Brazilian calendar over 252. 252 represents the total number of business days in the Brazilian calendar.
- These bonds are yield quoted in percentage form, truncated 4 decimals.
- Unitary price is expressed in cash truncated to 6 decimals, inclusive of accrued and inflation, therefore total payment equals price \* # of units.
- Settlement = T+1.
- Yield convention is annual compounding. Discount periods are calculated on the number of business days from settle to payment over 252.
- Coupons are calculated on an exponential basis in accordance with ANDIMA's standard.
- The Reference CPI Value denotes the corresponding IPC-A value for current settlement. The IPC-A value is effective for settlement from the 15<sup>th</sup> of the next month past the published month up to but excluding the 15<sup>th</sup> two months past the published month, both days are adjusted on a modified following business day basis. For example the September IPC-A would be effective for the settlement period from October 15<sup>th</sup> up to but excluding November 15<sup>th</sup>, adjusted on a modified following business day basis. For the avoidance of doubt, this is referred to as an effective period.
- Index assumption, also known as the IPC-A assumption is derived in accordance with ANDIMA's methodology. For settlement dates where the IPC-A value of the month subsequent to the current effective period is known, the index assumption is derived as the IPC-A from subsequent month / IPC-A from the effective period. For all other settlement dates the inflation assumption data published by ANDIMA, BZCLASSU Index is applied.
- The index variation factor includes these expectations as follows:

Index variation =  $(\text{IPC-A} / \text{IPC-A @ BASE DATE}) * (\text{IPCA assumption} / 100 + 1)^{(\text{Bus.Days Passed} / \text{Curr. Month Bus Days})}$

- DV01 is expressed in cash terms.
- Yield with inflation assumption applies inflation adjusted cash flows projected using the inflation assumption. The inflation assumption is the percentage change value of the year over year inflation growth from the central bank survey, BZMRPCA2 Index. Users can override this rate in the inflation assumption field on YA or apply their own month over month percentage change expectations on SWIL4. Users can drag & drop value for up to 60 monthly periods and apply a constant annual rate for all subsequent periods.



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- CSHF displays cash flows in three forms. Unadjusted assumes no adjustment for inflation. 0% assumption assumes known inflation, but projects future inflation at zero percent. With assumption, assumes known inflation and projects future periods assuming inflation increases annually at the inflation assumption rate. The inflation adjusted cash flows with projection can be overridden using the inflation assumption on CSHF or through the values updated on SWIL4.

## 1195: Brazil ILB - Brazil Inflation Linked Securities

- Used on NTN-C bonds linked to IBREIGPM <INDEX>.
- Periods for all calculations are based on the number of business days in the period, according to the Brazilian calendar over 252. 252 represents the total number of business days in the Brazilian calendar.
- These bonds are yield quoted in percentage form, truncated 4 decimals.
- Unitary price is expressed in cash truncated to 6 decimals, inclusive of accrued and inflation, therefore total payment equals price \* # of units.
- Settlement = T+1.
- Yield convention is annual compounding. Discount periods are calculated on the number of business days from settle to payment over 252.
- Coupons are calculated on an exponential basis in accordance with ANDIMA's standard.
- The Reference CPI Value denotes the corresponding IGP-M value for current settlement. The IGP-M value is effective for settlement from the first business day of the next month from the published month up and including last business day of the next month. For example the September IPC-A would be effective for the settlement period from October 1<sup>st</sup> up to and including the last business day in October. For the avoidance of doubt, this is referred to as an effective period.
- Index assumption, also known as the IGP-M assumption is derived in accordance with ANDIMA's methodology. IGP-M assumption uses data published by ANDIMA. BZIVIGPM Index is used as the IGP-M assumption. When the actual inflation values are released for the current month, BZIVIGPM Index is replaced by IBREGPMM Index.
- The index variation factor includes these expectations as follows:

Index variation= (IGP-M / IGP-M @ BASE DATE) \* (IGP-M assumption / 100 + 1) ^ (Bus.Days Passed / Curr. Month Bus Days)

- DV01 is expressed in cash terms.
- Yield with inflation assumption applies inflation adjusted cash flows projected using the inflation assumption. The inflation assumption is the percentage change value of the year over year inflation growth from the central bank survey, BZMRGPM2 Index. Users can override this rate in the inflation assumption field on YA or apply their own month over month percentage change expectations on SWIL4. Users can drag & drop value for up to 60 monthly periods and apply a constant annual rate for all subsequent periods.



# Bloomberg

- CSHF displays cash flows in three forms. Unadjusted assumes no adjustment for inflation. 0% assumption assumes known inflation, but projects future inflation at zero percent. With assumption, assumes known inflation and projects future periods assuming inflation increases annually at the inflation assumption rate. The inflation adjusted cash flows with projection can be overridden using the inflation assumption on CSHF or through the values updated on SWIL4.

## 1199: Taiwan Certificate of Deposits

- Yield is calculated using simple interest and money market conventions.
- Incorporates a 20% withholding tax on accrued and capital gains for issues with a maturity of less than one year.
- Trades on a dirty, after tax basis.
- The day count for accrued interest and price to yield calculations is ACT/365.
- Default settlement is a T+0

## 1203: Polish Inflation-Linked Bonds

- Used for sovereign and corporate bonds linked to Polish CPI, (POCPILB Index).
- Yields are calculated on a annual compound basis except in the last period, where it applies simple yield.
- Price is exclusive of inflation.
- Day count is ACT/ACT.
- Inflation adjustment or index ratio equals the result of  $\text{round}((\text{reference CPI},5)/\text{round}(\text{base CPI},5),5)$
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- May apply ex-dividend trading conventions, depending on the individual security. Latest government bond issue uses a 2-days ex-div period.
- Price is clean exclusive of inflation, however during the ex-dividend periods, market prices are adjusted to include negative accrued interest. For that reason, to avoid double adjustment in the period, a value of 0 appears in the Accrued Interest field. Outside of an ex-dividend period total payment equals price \* accrued \* index ratio \* face. Inside of an ex-dividend period total payment equals price \* index ratio \* face.
- Accrued interest is calculated on a nominal 1000 zloty face amount and is rounded to two decimal places.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement is T+2.
- Principal minimum redemption value is 100% of nominal value.
- Equivalent to nominal calc type 760

## 1207: India Inflation-linked Bonds

- Used for Indian bonds linked to India Wholesale Prices Index All Commodities (INFINF Index).
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency, except when settlement is in the last period, where it applies simple yield.
- Price is exclusive of inflation.
- Discount periods, accrued and coupons are calculated on a ISMA 30/360 basis
- Inflation adjustment or index ratio equals reference CPI / base CPI truncated to 6, then rounded to 5 decimals
- Reference CPI is calculated as the interpolated value of CPI for 4 and 5 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore total payment equals (price/100 + accrued) \* index ratio \* face.
- Accrued = Real Coupon \* (# of 30/360 days accrued / 360) \* nominal value \* index ratio.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement is T+1.
- Principal minimum redemption value is 100% of nominal value
- See government primer for more information  
<http://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/IIBT091210.pdf>

## 1211: Thailand Street Convention

- Accrued only calc type for Thai Structured Notes.
- The calculation of accrued interest is based on an ACT/365 day count and rounded to 6 decimal places.
- Triggers advanced analytics for floaters that appear in the FRN Pricing Analysis function (YAF).

## 1212: Slovenian Government Bonds

- Trade on the main market of the Ljubljana Stock Exchange, and are never listed on the TVUL segment of the LjSE at the same time.
- Bonds are based on ACT/ACT ISMA daycount convention.
- The main feature of the bonds is a specific accrued interest calculation.
- AI is calculated starting 3 business days + 1 trade date before the coupon pay date.

## 1216: UK Three Month Lag Index-Linked Treasury Gilts

FRANKFURT   HONG KONG   LONDON   NEW YORK   SAN FRANCISCO   SÃO PAULO   SINGAPORE   SYDNEY   TOKYO    Press the <HELP> key twice for instant live assistance.

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- Used for UK Treasury Gilts and corporate bonds, both bullets and sinkers, whose principal and coupon payments are linked to UK Retail Price Index (UKRPI Index).
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency and quoted on real basis, meaning inflation adjusted cashflow are not taken into account.
- Price is exclusive of inflation.
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore net amount equals  $\text{price}/100 * \text{index ratio} * \text{face}$  and gross amount equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- Gilts apply a seven business day ex-dividend convention corporate issues may vary.
- Accrued interest is not rounded.
- S/A coupon payments are rounded to the nearest six decimal places per 100 sterling nominal after the index ratio is applied.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4.
- Yield beta can be overridden on COVR.
- Settlement is T+1.
- Similar to nominal calc 26.
- Click here for further information:  
<http://www.dmo.gov.uk/documentview.aspx?docname=/giltsmarket/formulae/indexlinke>  
[d3m.pdf&page=Formulae/Calc](#)

## 1221: Thai Promissory Note Long term

- Used for fixed rate Thai promissory notes on the Money market yellow key under PGM PN that pay periodic coupons
- Options 1 and 3 under Note Type on MMPL1 for these programs
- Securities can be callable and bullet
- Calculates yield on a money market equivalent basis
- Defaults to T+1 settlement

## 1222: Thai Promissory Note

- Used for fixed rate Thai promissory notes on the Money market yellow key under PGM PN that pay coupon at maturity
- Options 2 and 4 under Note Type on MMPL1 for these programs
- Securities can be callable and bullet
- Calculates simple yield
- Defaults to T+1 settlement

## 1224: Bonds with Blended Coupon (Cash and Capitalization)

- Used for the new Argentinean Discount denominated in Dollars and Euros or similar structures.
- These are pro rata sinking fund bonds that pay coupons partly in capitalized principal, partly in cash.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency
- Discount periods are calculated using Act/365
- It applies a factor to adjust principal and par value.
- The factor is increased by the capitalized interest or decreased by the amortized principal.
- Settlement amounts include principal, accrued capitalization, and accrued interest.

## 1227: Argentinean Discount Bonds in Pesos

- These are pro rata sinking fund bonds that pay coupons partly in capitalized principal, partly in cash.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency
- Discount periods are calculated using Act/365.
- The actual payments are made in CER, the inflation adjusted reference value.
- A factor is applied to adjust principal and par value.
- The factor is increased by the capitalized interest or decreased by the amortized principal.
- Settlement amounts include principal, accrued capitalization, and accrued interest. Settlement price is an "All in" price, which includes principal, accrued interest, accrued capitalization, and inflation adjustment. Therefore total payment equals price \* face.
- All cash flows are adjusted with an inflation factor that uses the CER value 10 business days before the payment date over the base CER from 10 days before the issue date.
- For payment dates with an unknown CER, the calculation uses the latest known CER value. It also provides scenario analysis with projected inflation.

## 1229: Euro JPN I/L: Simple -For Euro Yen Inflation Linked Bonds

- Works like calc 1173, but does not incorporate the trade suspension period inherent to Japanese government bonds.
- Currently not in use.

## 1234: Ukrainian Government Fixed Rate Bonds

- The bonds are priced clean. However, you can also view dirty prices on YA <Go>.
- Prices and accrued are rounded to 2 decimals on 1000 par.
- The yield compounds annually and is rounded to 2 decimals, even though the bonds pay out on a 91 day or 18 day basis.

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- Coupon payments and accrued interest are calculated on an ACT/ACT basis; price/yield is discounted on an ACT/365 basis.

## 1238: Israel CPI-Linked Bonds

- Used for Various types of Israel inflation linked bonds.
- Yields are calculated on an annual compound basis using an Act/365 day count.
- Prices are inclusive of accrued and inflation (All-in) and rounded to 2 decimals.
- Inflation adjustment (index ratio) equals reference CPI / base CPI.
- Base CPI is the monthly CPI value of ISCPINM Index at issuance. Note since the Israel Central Bureau of Static rebases the CPI index periodically this base CPI may be a historical value adjusted to the current rebasing.
- Reference CPI is the monthly CPI value of ISCPINM Index applicable for the current settlement.
- Yield with inflation assumption applies the assumption from ISIFAR Index, the central bank projection.
- ISIFDATE Index determines the settlement date from which the monthly rate is applicable.
- Yield beta can be overridden on COVR.
- Applies ex-dividend conventions. See the Schedules sidebar on the Security Description function (DES) for the ex-dividend schedule.
- CSHF displays projected inflation adjusted cash flows using the assumption from ISIFAR Index
- See the following conventions applicable to each type.

### New government inflation linked bonds.

- Issued from 2006 under ticker ILCP1
- Periodic coupon calculations are as follows:  

$$X = 100 * CPN * (\text{Actual Days In period}/365), \text{ round } 5.$$

$$\text{Accrued} = \text{Face}/100 * X * \text{Index Ratio}$$
- Coupons are paid annually on the last business day of the month. Ex-dividend fall on the 21st of the month.
- No deflation floor.
- Follows a T+1 settlement convention using CDR I7 (Israel Banking Holiday). However, the value date applied for determining time in the present value formula is T+0. Ex-dividend effective dates and accrued still follow T+1

### Modern Israel government Galil inflation-linked bonds.

- Issued from 1998 through 2004,
- Periodic coupon calculations are as follows:  

$$X = 100 * (((1 + CPN)^{(\text{Actual Days In Period}/365)} - 1), \text{ round } 5.$$

$$Y = X * \text{days accrued}/\text{number of days in the period}, \text{ round } 5.$$

$$\text{Accrued} = \text{Face}/100 * Y * \text{Index Ratio}$$
- Record date is 15 business days prior the last day of the month. The ex-date is the next

# Bloomberg

business day.

- Applies a deflation floor.
- Follows a T+1 settlement convention using CDR I7 (Israel Banking Holiday). However, the value date applied for determining time in the present value formula is T+0. Ex-dividend effective dates and accrued still follow T+1

## Old Israel government Galil inflation-linked bonds. I

- Issued prior to 1998,
- Coupon dates are un-bumped.
- Periodic coupon calculations are  $100 * \text{Coupon} / \text{Coupon Frequency}$
- Accrued interest calculations are as follows:  

$$X = 100 * \text{Actual days accrued} / 365, \text{ round } 5.$$

$$\text{Accrued} = \text{Face} / 100 * X * \text{Index Ratio}$$
- Record date is 15 business days prior the last day of the month. The ex-date is the next business day.
- Applies a deflation floor.

## CPI linked corporate bonds.

- Used for both bullets or sinkers
- Coupon dates are un-bumped.
- Standard periods are calculated as  $100 * \text{CPN} / \text{Coupon Frequency}$ .
- Odd coupon cash flows and accrued is calculated as can be calculated as:  

$$X = 100 * \text{CPN} * (\text{Actual Days in Period} / 365), \text{ round } 5$$

$$\text{Accrued} = \text{Face} / 100 * X * \text{Index Ratio}$$

For sinking fund bonds  
 (X\* adjusted principal factor), round 5

Where:

Adjusted principal factor = the sum of remaining sinks from pay date to maturity/ sum of total remain sinks from current settlement to maturity

- For sinking fund bonds principal cash flows area calculated as  $100 * \text{adjusted principal factor}$  rounded to 5 decimals
- Yield to worst defaults to yield to average life on sinking fund bonds Applies a deflation floor.
- Follow a T+1 settlement convention using CDR I7 (Israel Banking Holiday)

## 1242: Float to Fixed (Flip Notes)

- Takes into account current rate information for benchmarks that are used during the floater period, as well as the current fixed rate information.



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*Note:* You cannot use calculation type 1242 in the Private Security Update function (PRPL/PPCR).

## 1247: Chilean Central Bank Bonds

- Used for fixed-rate bonds.
- Yields as discount on an annual basis using an ACT/365 day count.
- Price is dirty in percentage form.
- Accrued is displayed on tickets for informational purposes only.
- Some bonds are denominated in (Unidades de Fomento CLF). For these the payment invoice appears in both Chilean pesos (CLP) and CLF by converting the CLF amounts into CLP at the appropriate conversion value. See CHUF Index for rates.
- Coupon cash flows are calculated as coupon / coupon frequency.
- The par value is adjusted by the internal rate of return at issue of the bond (also known in Chile as 'TERA'), which is constant throughout the life of a bond and is independent of the price/yield calculation.
- Domestic bonds follow a T+1 settlement convention and CDR CL (Chile Calendar) as their settlement calendar.

## 1251: Moldova Government Fixed Rate Bonds

- Pay on a quarterly or semi-annual basis
- The compounding is annual on an ACT/365 day count basis.
- Accrued is calculated using an ACT/365 basis.

## 1255: Day Payer Floating Rate Bonds

- Used for floaters that pay on a 91 or 182 day basis. Applied to Venezuela Government bonds (Vebonos).
- Valued on a Price to Yield basis
- YA also allows users to value on a Discount margin basis
- Discount margin equals yield - assumed bench rate.
- Yield is calculated on a compound basis using ACT/360 expected for when settlement occurs in the last period and is then calculated on a simple basis.
- Sinking fund bonds are calculated on an average life basis.
- Accrued interest is calculated on an ACT/360 basis.

## 1257: Slovenian Government Bonds

- Trade on the TUVL segment of the Ljubljana Stock Exchange.
- These bonds apply a two business days ex-div period.
- Yields are calculated on a compound basis, except in the last period where simple yield is applied.

# Bloomberg

- The price/yield formula uses day count ISDA ACT/ACT, split accrued method, for determining the discount periods.
- Accrued interest is calculated using standard ACT/ACT and truncated to two decimal places on the final amount.

## 1261: Kazakhstan Government Bonds

- Used for Kazakhstan Treasury Notes issued prior to January 1, 2004.
- Price and yield are rounded to four decimal places.
- Coupon payment dates fall on alternating 182 and 183 day periods.
- Cash flow amounts are adjusted accordingly.
- These securities settle at T+0.
- Kazakhstan Government Bond issues after January 1, 2004 use calc 999.

## 1265: Malaysian Floating Rate

- Used for Sanadat Mudharabah bonds where the coupon is determined by the issuer rather than a Benchmark + spread.
- Yields default to a next coupon date workout. However, yield to maturity calculations use future cash flows estimated using expected coupon rates provided by the issuer.
- Cash flows are bumped and adjusted on a modified following business day basis.
- Price, yield, and accrued interest are rounded to 2 decimals.
- Settlement is T+2.
- However, rounding and settlement may be adjusted for specific issues.

## 1267: Malaysian Floating Rate

- Coupons are based on a benchmark + spread.
- Discount margin and yield are calculated to maturity.
- Cash flows can accommodate both modified adjusted and unadjusted convention.
- Price, yield, and accrued interest are rounded to two decimals.
- Settlement is T+2.
- Supports KLIBOR as well as other benchmarks.
- Money market securities created using MMPL with deposit type FR NID will follow modified following unadjusted convention. In addition, the calc label will change to FR NID

## 1269: Fixed Day Payer

- Coupon frequency is on a day pay basis (7, 14, 28, 91, 182, 364 days).
- Day count is ACT/364 or ACT/ACT
- Yields are compounded on the same frequency as the coupon frequency even in the last period

# Bloomberg

- Yields are rounded to two decimals
- Clean price is rounding defaults to four decimals. However KES denominated securities apply a four decimal rounding to dirty price. On sinking fund bonds invoice total payment is calculated as rounded dirty price \* sink factor \* face.
- For Kenya Government Bond BXT allows users to apply invoice amounts gross or net of withholding tax.
- 10% withholding is applied to bonds with original tenors 10 year or greater and 15% for those that are less.
- Settlement is T+2.

## 1273: Japanese Non-Government Floater

- Used for Japanese agency and corporate floating rate bonds that have rates based on the most recent auctioned JBG 10 year base yield plus or minus spread (JGBY10YR <INDEX>).
- Accrued is based on ACT/365 day type.
- When a coupon date falls on non-business day, payment will be made previous business day with no amount adjustment. CSHF will show adjusted dates. In this case, BXT shows zero accrued between the previous business date and the coupon date.
- Settlement is T+3.
- The trade suspension period may vary depending on whether its Hofuri clearing house eligible. Hofuri conventions apply a 1 business day period, traditional conventions apply a 3 calendar week period.
- The accrued interest factor is truncated and calculated as follows:  
Accrued Interest Factor (X):  
$$100 * (\text{Coupon}) * (\text{Days Held} / \text{Days in Year}) = Y$$
  
Y is truncated after 7 decimal places to result in X. For example, if  $Y = 0.123456789$ ,  $X = 0.1234567$ , not  $0.1234568$   
Accrued Interest:  $(\text{Face} / 100) * X$ , truncate decimals to 1 yen
- BXT allows users to calculate invoice values net of accrued tax.
- Users can enable commission information on BXT by selecting 97) settings, then the Trade Numbers tab then the Enable Commission check box.

## 1275: Peruvian Local Sovereign Fixed Rate Debt

- The street convention yield is the annual rate discounted on ACT/360 day count.
- The interest is paid on a 30/360 basis and the accrued interest is calculated ACT/ACT.

## 1280: Simple Discount

- Used for Zero-Coupon bonds that are quoted on a discount to par basis, but have slightly different conventions compared to calc type 5.

# Bloomberg

## 1281: Israel Gilon Floating Rate Bonds

- Prices are dirty.
- Yields are calculated on an ACT/365 compounding basis.
- Coupon rates are calculated on the simple average yield of the Makam T-bills with a 90-365 maturity. Enter MAKAMAVG <INDEX> <Go> to view daily values. Coupon dates occur on the last business day of the month.
- Accrued interest displays on invoices for informational purposes only. It is rounded to 5 decimals on 100 par and applies 10-day ex-dividend conventions.
- Coupon cash flows are calculated on an ACT/365 compounded basis rounded to 5 decimals on 100 par.
- Settlement is T+1 off of CDR I7, Israel Banking Holiday.
- Accrued interest is calculated as follows:

$$AI = \text{Face}/100 * Y$$

$$Y = C * D/T$$

$$C = 100 * (((1 + R)^{(T/365)}) - 1)$$

Where:

AI = Accrued Interest  
 D = accrued days  
 T = actual days in period  
 R = annual coupon rate in decimal form  
 C = cash coupon on 100 par rounded 5 decimals  
 Y = cash accrued on 100 par rounded 5 decimals

## 1286: Jamaica Government Bonds

- Similar to calc type 1, except for the way the first compounding period is calculated: 1-(# of days between settlement & previous cpn date)/(365/2).
- Triggers T+2 settlement period.
- YA only displays 3 decimals for the yield, but does not round for internal price/yield calculations.

## 1290: Argentine Boden Floating Rate Bonds

- The coupon rates float off of Libor.
- Prices are all-in, inclusive of accrued and the sink factor. Yield, accrued, and cash flow conventions default to Bloomberg methodology (described below).
- Since the USD Libor rate uses ACT/360 day count convention, the assumed index is adjusted to bond's day count of ACT/365 convention using the formula:

Libor \* 365 / 360 or Libor \* 366 / 360 if it is a leap year.

# Bloomberg

- The price on YA can be adjusted to exclude the most current principal factor and converted into USD.
- There are three calculation conventions that can be applied to price and yield calculations:
  - Bloomberg - The frequency of the quoted yield is semi-annual. The day count convention for accrued interest is ACT/365. If the coupon payment is on a non-good business day, then the cash flow is bumped to the next good business day.
  - IAMC - The frequency of the quoted yield is annualized. The day count convention for accrued interest is ACT/360. Cash flows are not bumped when the pay day is on a non-good business day.
  - MAE - The frequency of the quoted yield is annualized. The day count convention for accrued interest is ACT/365. Cash flows are not bumped when the pay day is on a non-good business day.

## 1294: Mexican Corporate Floaters

- Can be applied to both standard pay frequencies (Quarterly, Semiannual, Annual) and day paying frequencies (7,28,91, 182 & 364 Days).
- Discount margin (Sobretasa) calculated on an annual compounding basis.
- Traded on a unit basis.
- Applies ACT/360 as the day count for discounting, accrued and cash flow calculations.
- Sensitivity calculated to the next refix date.

## 1297: Split Accrual ACT/ACT

- Yields are calculated on a compounded basis on the same frequency as the coupon frequency.
- Accrued interest and discount periods are calculated using ISDA ACT/ACT split accrual methodology. This means periods are calculated as days in a non-leap year / 365 + days in a leap year /366
- Settlement defaults to T+3 but may be adjusted to the conventions of any individual bond.
- This calc is similar to calc 962 however calc 962 calculates full periods as coupon/coupon frequency.
- For accrued-only version of ISDA ACT/ACT split accrual, see calc type 1007.

## 1301: Colombia CPI Linked Floater

- Used for Colombian floaters linked to YoY inflation, COCPIY Index.
- Follows MEC conventions.
- Price is dirty and truncation to 3 decimals on 100 par.
- However, accrued interest appears for descriptive purposes and is rounded to three decimals.
- Future cash flows are projected as  $(1 + QM) * (1 + \text{latest COCPIY}) - 1$ .
- PV of cash flows are rounded to 6 decimals on 100 par before summation.
- Real Yield is derived from the nominal yield using the Fisher Equation.

## 1307: EONIA Index Linked CDs

- Used for CD, CP and EMTN money markets linked to EONIA or EUREPO.
- This provides a dirty price/discount margin calculation. Accrued interest is for informational purposes only.
- Settlement is T+1.
- When updating or creating the MMPL security Users must enter the appropriate benchmark on the Floater information page, and applicable quoted margin if applicable.
- Benchmark 162 for EONIA, compounded on an ACT/360 Basis, applies rounding conventions of 7 decimals on daily compounded value and 8 decimals on product of daily compounded values.
- Benchmark 392 for EONIA, compounded on an ACT/360 Basis, no rounding applied to the daily compounded value, product of daily compounded value rounded to 5 decimals. The same as EONC <Go>.
- Benchmark 377 for EONIA, compounded on an ACT/365 Basis.
- Benchmark 378 for EUREPO, compounded on an ACT/365 Basis.
- Since EONIA/EUREPO at settle is not known on trade date, it defaults to the last known value. However, on YA users can override this value. By overriding this value the estimated OIS at settle and resulting capitalized EONIA/EUREPO value will be affected.
- The estimated EONIA or EUREPO to maturity is calculated using a linear interpolation off the applicable swap curve. However, on YA <Go>, users can override this value.
- Users can override the quoted margin on YA <Go> as well.

## 1309: Brazilian Fixed Coupon Rate Bonds

- Used for government NTN-F and corporate fixed rate bonds
- Periods for all calculations are based on the number of business days in the period, according to the Brazilian calendar over 252. 252 represents the total number of business days in the Brazilian calendar.
- These bonds are yield quoted in percentage form, truncated 4 decimals.
- Unitary price is expressed in cash truncated to 6 decimals, therefore total payment equals price \* # of units.
- Yield convention is annual compounding. Discount periods are calculated on the number of days from settle to payment over 252.
- For sinking fund bonds yield convention is average life.
- For government NTN-F bonds the coupon is calculated as:
- $((r / 100 + 1)^{(0.5)} - 1) * \text{Par Value}$ , where r = annual coupon rate
- For corporate bonds the coupon rate is calculated as:
- $((r / 100 + 1)^{(bd/252)} - 1) * \text{current factor} * \text{par value}$
- r=annual cpn, bd=business days in current period, 252=business days in a year
- Accrued interest for all bonds is calculated as:



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- Periodic coupon \* (business days accrued / business days in the coupon period)
- DV01 is expressed in cash terms.

## 1311: Multi-Step Coupon Bond

- Used for multi-coupon bonds with up to 25 steps.
- Applies street convention price/yield calculations.
- The yield calculation is compound, discounting cash flows on the same frequency as the coupon frequency. Simple yield is applied in the last period
- Uses the day count listed on DES in the price/yield, accrued interest calculation, and cash flow payment amounts.
- When the day count is ACT/360 or ACT/365, cash flow amounts are calculated on number of days in the period over 360 or 365. ICMA convention is applies for ACT/ACT
- For unadjusted cash flow amounts, see calc 1379.
- The following local conventions apply any may differ, then description above.
- For INR denominated bonds:
  - Price and yield is rounded to 4 decimals
  - Yields are calculated on an annual compounding basis. Simple yield is applied in the last period
  - The primary ACT/ACT convention is days in period / 366, if February 29th is included in the period, and days in period / 365 if not. However, some INR denominated bonds may apply a convention where ACT/ACT is defined as days/365 if the end date occurs in a non-leap year and days/366 if the end date occurs in a leap year.
  - YA and BXT display an XIRR yield equivalent, which is annual compounding using an ACT/365 day count.
  - Ex-dividend conventions may apply
- For Italian domestic bonds the domestics yield convention is applied. See calculation type 523 for more information
- On TWD denominated securities listed on Greta, allow users to apply a tax on accrued on the invoice on YA and BXT.
- For Chinese domestic bonds:
  - Day count is NL/365 for Shanghai or Shenzhen listed securities and ACT/ACT for all others
  - The year basis for the simple yield in the last period is determined as the number of days in a year from the penultimate coupon to one year later.
  - For Shanghai or Shenzhen listed bonds accrued interest is calculated inclusive of both the settlement and previous coupon. Note this will result in one day of interest for settlement on a payment date.
  - For Shanghai or Shenzhen listed bonds the NL/365 as applied as the discount and
  - accrued day type but calculate coupons on a (Cpn/Cpn Freq) basis.

# Bloomberg

- For sinking fund bonds that start to sink after 3/10/14, the price may be inclusive of the sink factor
- Settlement is T+0 for Shanghai or Shenzhen listed bonds reflecting when the bond transfers to the buyer
- Settlement is T+1 for China Interbank bonds

## 1317: Argentinean CER Linked Bonds and Uruguayan PIK Bonds

- These bonds capitalize and/or sink. Default yield is yield to maturity, compounds on the same frequency as the coupon frequency.
- Can also be used for bonds with index adjusted cash flows.

## 1322: Bonds that Capitalize and/or Sink

- Default yield is yield to average life, compounds on the same frequency as the coupon frequency.
- Can also be used for bonds with index adjusted cash flows.

## 1327: Bonds that Capitalize and/or Sink

- Default yield is yield to maturity, compounds on an annual basis.
- Can also be used for bonds with index adjusted cash flows.

## 1330: Argentinean CER Linked Bonds

- These bonds capitalize and/or sink. Default yield is yield to average life, compounds on an annual basis.
- Can also be used for bonds with index adjusted cash flows. Applies to Argentina CER linked bonds.

## 1334: Lebanon Discount Treasury Bills

- Used for Zero-Coupon bonds that calculate price to discount. Prices are in cash, rounded to zero decimals, excluding Tax (Gross).
- The discount rate and yields are rounded to two decimals.
- Unit traded. Although Gross price is the default, the Yield Analysis function (YA) displays Net Price calculations as well.
- Withholding tax appears on invoices on YA, BXT/SXT calculated as  $(P_1 - P_2) \cdot .05 \cdot \text{face}$ .

Where:

- $P_1$  = Issue Price
- $P_2$  = Price at settlement assuming original issue discount
- .05 = tax rate in decimal form

# Bloomberg

- Settlement is at T+3.

## 1339: Lebanon Government Bonds

- Listed under LEBGB <CORP>.
- Coupon pays every 182 days.
- Prices are clean, in cash form and unit traded. Clean price is derived by rounding dirty price to two decimals on one unit then subtracting unrounded accrued.
- Yield is rounded to two decimals.
- Price/yield calculation discounts on an ACT/ACT basis.
- On YA & BXT/SXT accrued interest withholding tax is applied to the invoice. Default tax rate is 5% however users can override this value
- Settlement is T+3.

## 1350: Inflation Linked Bonds Tied to the Turkish CPI (TUCPI <INDEX> <Go>)

- Calculations follow a three-month lag convention.
- Prices exclusive of inflation are calculated on a clean basis as of June 2, 2008.
- The price convention previous to this date was dirty.

Accrued = X \* nominal value \* index ratio, where X = Real Coupon \* (# of days accrued/# of days in period).

- The index ratio is calculated as Reference CPI rounded to six decimals / Base CPI rounded to six decimals.
- Coupons pay every 91, 182, and 364 days.
- Inflation adjusted coupon cash flows are rounded to two decimal on 100 par.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement follows standard Turkish domestic conventions of T+0 from 00:00-13:59 Istanbul time and T+1 from 14:00-23:59 Istanbul time.

## 1354: Korean I/L Bond

- Used for inflation-linked bonds whose principal and coupon payments are linked to Korean CPI and follow the 3-month lag indexation.
- To display the CPI value, enter INTKKOCPI <INDEX> <Go>. This index is the NSA CPI value adjusted for historical rebasing so that historical resulting index ratios match those that were originally published for those applicable settlement dates.
- Prices are quoted in a dirty price unadjusted for inflation.

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- For PCS's KISK/KINP/KBNP/KBKI/KBPM/FNPR/NPRI prices are contributed all-in (inclusive of accrued and inflation) If a user selects one of these as their PCS, YA/YAS/CSHF will wake up to a dirty price unadjusted for inflation, derived from the contributed all-in ask price.
- The primary yield is habitual.
- Flat Amount, Gross Amount, and Net Amount are truncated to zero on 10,000 face.
- Accrued interest is truncated to 10 won on total face.
- On YA and BXT users can removed the invoice truncation by changing Round Price to N.
- Index Ratio, Base CPI, and Reference CPI are rounded to five decimals.
- TAX-Invoice amounts are adjusted for withholding tax.  
TOTAL TAX = ACCR INT FOR TAXES \* X, where X is tax rate.  
TAX ADJUSTMENT FACTOR = Total Tax per face, truncated to 10 won - TOTAL TAX
- COMMISSION - Calculation based on per 10,000 Won.  
COMMISSION = X \* Face Amount, where X is percentage of 10,000 (Won).
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4.
- Yield beta can be overridden on COVR.
- No coupon deflation protection. Bonds issued before June 2010 have no deflation protection, those issue on or after June 2010 had a minimum principal redemption at 100% of par.
- Settlement is T+1

## 1358: Finnish CPI Index Linked Bonds

- These bonds are three month lag securities linked to FICP2 <INDEX>. For example: XS0275534948 <CORP>.
- The index ratio and current reference CPI are rounded to five decimals. Price is unadjusted for inflation.
- The bonds trade on a real yield basis.
- Price is exclusive of inflation
- Both price and yield are rounded to the third decimal place.
- On the payment invoice, gross amount and net amount are adjusted for inflation.
- Accrued is adjusted for inflation and rounds to the seventh decimal place.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield beta can be overridden on COVR.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.

## 1362: Thailand Bibor Floater

- Used on the Thailand Floater linked to the BIBOR Index ALLX BOFX <Go>.
- Calc defaults to 14 ex-dividend days for corporate bonds, 10 days for government bonds.
- Price, yield, discount margin, and AI are rounded to six decimals. Settlement defaults to T+2.

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- Day count is ACT/365 for AI, but P/Y are discounted assuming even coupon payment.
- Coupon convention is Modified Business Day-Unadjusted.

## 1364: Taiwan Compound Bonds

- Used for coupons with multi compounding frequency within one coupon payment period.
- Price appears with no rounding; yields are calculated with no rounding and up to 4 decimals.
- Street convention yield on YA defaults to annual compounding.
- Settlement is T+2.
- This calc does not work for coupon paid at maturity issues.
- Accrued interest is subject to a 10% withholding tax, truncated to the nearest integer and is incorporated into final settlement amount calculations.

## 1368: Brazilian Debentures with a Coupon Structure of DI + Spread

- Used for floating rate corporate bonds (debentures) and other long term non-government bonds, such as letras financeiras (LF) that are linked to the Interbank Deposit Rate (CDI can be seen under BZDIOVRA Index) and that pay a spread determined at issue.
- Calculations are based on the number of business days in a year, equal to 252 days, and the interest rate (CDI) is accumulated on a daily basis and rounded to eight decimal places.
- Coupons are calculated on an exponential basis.
- Cash flows and discounted cash flows are truncated to six decimal places.
- These calculations are in accordance with the Associacao Nacional das Instituicoes do Mercado Aberto (ANDIMA).
- Future coupon payments are estimated on an exponential interpolation basis, based on BM&F Pre x DI T-1 Curve. See ICVS 89 <Go> for curve constituents. YA allows users to override rates for analysis on YA using the T+0 curve by changing CURVE # 2 or by applying their own rates by changing CURVE # to C.
- Daily Accrued DI and Interest Factors can be seen from YA 1 <Go>.

## 1370: Mexican CB Interest at Maturity

- Used for Mexican Certificados Bursatiles money market securities that pay interest at maturity.
- Coupon is calculated as  $\text{days in period} / 360 * \text{annual coupon rate} * \text{face}$
- Yield is calculated on a compound basis using an Act/360 day count.
- Price is rounded to 6 decimals
- Accrued is rounded to 6 decimals on a value of 100.
- Settlement is T+1.

## 1374: India Accrued Only Floater

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- Used for Indian bonds that refix daily but pay on a quarterly, semi-annual or annual basis.
- Calculates the accreted accrued interest up until settlement on tickets.
- If settlement occurs on a future date, it takes the last known index and applies that rate forward.
- Used for bonds linked to the NSE interbank rate NSERO <INDEX>.

## 1375: China Discount with Accrued Interest

- Used for Chinese domestic zero coupon bonds traded through China Interbank. Calculates price/yield on a simple basis.
- Accrued interest is calculated as:

$(\text{par} - \text{issue price}) * \text{accrued days/days from issue to maturity}$

- For China Interbank listed bonds BXT allows users apply CFETS price and yield rounding of 3 decimals
- For Shanghai or Shenzhen listed bonds accrued interest is calculated inclusive of both the settlement and previous coupon. Note this will result in one day of interest for settlement on a payment date.
- Settlement is T+0 for Shanghai or Shenzhen listed bonds reflecting when the bond transfers to the buyer
- Settlement is T+1 for China Interbank bonds

## 1379: Multi-Step Coupon Bond

- Used for multi-coupon bonds with up to 25 steps.
- Applies street convention price/yield calculations.
- Discounts cash flows on the same frequency as the coupon frequency.
- Uses the day count listed on DES in the calculating discount periods for price/yield and accrued interest calculations.
- However, cash flow amounts for the price/yield calculation are calculated on an unadjusted basis regardless of day count.
- For Thai domestic bonds, cash flow amounts are calculated on an unadjusted basis in the price/yield calculation to match the Thai Bond Market Association convention.
- However, CSHF and repo functionality apply adjusted coupon payment amounts in accordance with the DES day count to match actual payments.
- For step coupon calcs that use adjusted cash flow amounts in the price/yield calculations, see calc 1311.

## 1385: Bonds that Bump and Adjust Payments On a Modified Following Business Day Convention

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- Used for fixed-rate bonds that bump and adjust payments on a modified following-business-day convention. If an interest pay date is on a non-business day, the pay date will be bumped forward to the next business day, unless the next business day falls in the following month. If this is the case, the pay date will be bumped backward to the previous business day.
- Compounds yields on the same frequency as the coupon frequency even in the last period.

## 1389: Uganda Government Bonds

- These bonds are day payers that pay a coupon every 182 days.
- Interest is subject to a 20% withholding tax.
- Accrued is rounded to three decimal places.
- The clean price is calculated by subtracting the rounded accrued to the unrounded dirty price, and by rounding the result to three decimal places.
- Yield is also rounded to three decimals.
- Default price is gross clean price. Default yield is gross street convention yield.

## 1393: Netherlands Inflation Linked

- Used for bonds linked to Dutch Consumer Price Index (NECPIND Index)
- Uses standard Canadian Model with three month lag.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency, including the last period.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- $\text{Accrued} = \text{Unadjusted Coupon} / \text{coupon frequency} * (\# \text{ of days accrued} / \# \text{ of days in period}) * \text{nominal value} * \text{index ratio}$
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield Beta can be overridden on COVR.
- As of Oct 6, 2014 settlement is T+2.
- Principal minimum redemption value is 100% of nominal value

## 1397: Eurobonds Linked to the BECPHLTH Index

- Used for bonds linked to Belgium CPI Health NSA (BECPHLTH Index)
- Uses standard Canadian Model with three month lag.

# Bloomberg

- Yields are calculated on a compounded basis on the same frequency as the coupon frequency, including the last period.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- $\text{Accrued} = \text{Unadjusted Coupon} / \text{coupon frequency} * (\# \text{ of days accrued} / \# \text{ of days in period}) * \text{nominal value} * \text{index ratio}$
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield Beta can be overridden on COVR.
- As of Oct 6, 2014 settlement is T+2.
- Principal minimum redemption value is 100% of nominal value.

## 1401: Brazil Percent DI

- Used for floating rate corporate bonds (debentures) and other long term non-government bonds that pay interest related to a percentage of the CDI rate. CDI can be seen under BZDIOVRA Index.
- Calculations are based on the number of business days in a year, equal to 252 days, and the interest rate (CDI) is accumulated on a daily basis and rounded to eight decimal places.
- Coupons are calculated on an exponential basis.
- Cash flows and discounted cash flows are truncated to six decimal places.
- These calculations are in accordance with the Associacao Nacional das Instituicoes do Mercado Aberto (ANDIMA).
- Future coupon payments are estimated on an exponential interpolation basis, based on BM&F Pre x DI T-1 Curve. See ICVS 89 <Go> for curve constituents. YA allows users to override rates for analysis on YA using the T+0 curve by changing CURVE # 2 or by applying their own rates by changing CURVE # to C.
- Daily Accrued DI and Interest Factors can be seen from YA 1 <Go>.

## 1407: Accrued-Only Version of Fixed-Rate ISDA Calc Types 962/1297

- Calculates accrued interest on a split accrual basis for periods that pass from a leap to a non-leap year and vice versa.
- For more information, see calc type 962.

## 1405: Brazilian I/L Debentures

- Used for domestic debentures linked to the IGPM consumer price index (IBREIGPM <INDEX>).

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- The day count is based on the number of business days in a year, equal to 252 days. Unit traded.
- The coupon is calculated on an exponential basis, and the inflation index is accounted for on a pro-rata basis.
- Unitary price is expressed in cash truncated to 6 decimals, inclusive of accrued and inflation, therefore total payment equals price \* # of units.

## 1409: FX-Linked Notes Denominated in U.S. Dollars, with the Coupon and Redemption Paid in U.S. Dollars, but Linked to a Foreign Currency

- The default price is all in U.S. dollars.
- The default yield is the local currency/street convention yield.

## 1418: Brazilian I/L Debentures

- Used for domestic debentures linked to the IPCA consumer price index (BZCLVLUE <INDEX>).
- The day count is based on the number of business days in a year, equal to 252 days.
- Unit traded.
- The coupon is calculated on an exponential basis, and the inflation index is accounted for on a pro-rata basis.
- Unitary price is expressed in cash truncated to 6 decimals, inclusive of accrued and inflation, therefore total payment equals price \* # of units.

## 1421: Daily Refix Floating-Rate Notes with More Than 200 Rate Re-Fixes Within One Coupon Period

- See Calc 21 for further details.

## 1423: Pay-In-Kind Float

- Enables calculations for pay-in-kind (PIK) bonds with floating-rate coupons.
- The new calc combines floater calc 21 and fixed-rate PIK calc 111.
- You can value FRNs that pay PIK-to-cash or PIK for life via the discount margin calculation.

## 1430: India MIBOR Floaters Seven Day Compounding

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily, but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to yield assuming future cash flows are derived from the last known rate.
- Accrued interest is calculated on an accreted basis. If settlement occurs on a future date, it takes the last known index and applies that rate forward.

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## 1431: India MIBOR Floaters Business Day Compounding

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to yield assuming future cash flows are derived from the last known rate.
- Similar to calc 1430 in that accrued interest is calculated on an accreted basis however, it is only compounded on business days and applies simple interest on Sundays and public holidays.

## 1432: India MIBOR Floaters Seven Day Compounding MIBOR Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily, but pay on a quarterly, semi-annual, or annual basis.
- Similar to calc 1430 except the MIBOR index portion of the coupon is compounded and the spread is not.
- Calculates price to yield assuming future cash flows are derived from the last known rate.
- Accrued interest is calculated on an accreted basis.
- If settlement occurs on a future date, it takes the last known index and applies that rate forward.

## 1433: India MIBOR Floaters Business Day Compounding MIBOR Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to yield assuming future cash flows are derived from the last known rate.
- If settlement occurs on a future date, it takes the last known index and applies that rate forward.
- Similar to calc 1432 in that the MIBOR index portion of the coupon is compounded and the spread is not.
- Accrued interest is calculated on an accreted basis, however, it is only compounded on business days and applies simple interest on Sundays and public holidays.

## 1434: India MIBOR Floaters Seven Day Compounding Spread Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO index) that refix daily, but pay on a quarterly, semi-annual, or annual basis.
- Similar to calc 1430 except the spread portion of the coupon is compounded and the MIBOR index portion is not.
- Calculates price to yield assuming future cash flows are derived from the last known rate.
- Accrued interest is calculated on an accreted basis.
- If settlement occurs on a future date, it takes the last known index and applies that rate forward.

## 1435: India MIBOR Floaters Business Day Compounding Spread Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO index) that refix daily but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to yield assuming future cash flows are derived from the last known rate.
- If settlement occurs on a future date, it takes the last known index and applies that rate forward.
- Similar to calc 1434 in that the spread portion of the coupon is compounded and the MIBOR index is not.
- Accrued interest is calculated on an accreted basis, however, it is only compounded on business days and applies simple interest on Sundays and public holidays.

## 1437: Dominican Republic Central Bank Notes

- Prices are clean, in percent form
- Yields are compounded on the same frequency as the coupon frequency even in the last period
- For Corporate bonds:

Day count can be Act/365 or Act/Act

For Act/Act day count bonds the coupons are calculated as days in the period / year basis where the year basis is 366 if payment date falls in a leap year, otherwise 365.

When discounting future cash flows, the upcoming cash flow is pro-rated depending on the number of days remaining in the coupon period. The present value total is then, in effect, a clean price because the accrued interest has already been excluded. Accrued interest is then added back to the clean price to arrive at the invoice total.

Discount periods are calculated using the day count of the count of the bond. Act/Act bonds apply ICMA conventions.

- For bonds issued by the Ministerio De Hacienda (Ticker DRGB), or central bank (Tickers DRCBD & DRCBN) and related Global Depository Notes:

The full next cash flow amount is discounted, and clean price is calculated as the sum of present values of all the future cash flows minus accrued interest.

Day count is Act/Act and payment frequency is semi-annual.

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Coupons are calculated as days in the period / year basis where the year basis is 366 days when Feb. 29 falls within the calendar year previous to the coupon payment date, Otherwise 365.

Discount periods are calculated on an ICMA Act/Act basis.

For bonds issued by the Ministerio De Hacienda and related Global Depository Notes clean price is then rounded to 4 decimals.

## 1441: Armenian Multi-Coupon Fixed Rate Government and Corporate Bonds (Both Bullet and Sinking Fund)

- This calc is no longer in use. See calc 999.
- The bonds trade flat and are issued with an annualized fixed rate coupon.
- Price is not rounded.
- Yield is rounded to four decimal places.

## 1445: Toggle Notes

- Used for securities that give the issuer the option to pay payment-in-kind securities (PIK) or cash on every coupon payment.
- The default yield is PIK yield or cash yield according to the current payment method.
- Trades without accrued in PIK periods and clean in cash periods. Enter 1 <Go> from the main screen to display a custom yield screen, where you can enter your own payment projections.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Cash yield assumes all future coupons are paid in cash. PIK yield assumes holders entire position increases on a compound basis at the PIK coupon rate from settlement to maturity or the corresponding workout date.
- Triggers a T+1 settlement.

## 1449: Argentine NOBAC Floaters

- Used for all NOBAC floating rate notes that pay interest related to the BADLARPP <INDEX> rate, plus spread.
- Yields convention is annual compounding
- Nominal yield converts this yield to the same frequency of the interest payments.
- Premium over Badlar is the difference between nominal yield and the estimated coupon rate.
- For Sovereign bonds:



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- Coupon are reset at the end of the period using average badlar rate plus spread over the accrual period
- The accrual period is 10 days prior to the coupon period start date to 10 days prior to the coupon period end date.
- Future coupons are projected using the Estimated Cpn Rate plus spread.
- The Estimated coupon rate is the 5 day average of the badlar rates from 6 to 2 days prior to trade date.
- For settlement dates where the upcoming coupon is not th known the coupon is calculated using the Current Cpn Rate plus spread. Otherwise the calc will apply the average badlar rate over the entire accrual period.
- When settlement occurs in an unknown period the current coupon is calculated as:  

$$((\text{Average of badlar rate from the start of the accrual period to 2 days prior to trade date} * \text{accrued days} / \text{year basis}) + (\text{Estimated Cpn Rate} * \text{days remaining} / \text{year basis})) / (\text{days in period} / \text{year basis})$$
- Cash flows and discount periods apply an Act/Act say count where the year basis is 366 if payment date falls in a leap year, otherwise 365.
- Settlement is T+3

## 1451: Israel Gilboa Government Bonds

- Floating coupon paid, linked to the USD/ILS exchange rate.
- Present value of cash flows linked to exchange rate fixing BOIJUSD <INDEX>.
- Pay dates bumped back if the payment date falls on an inapplicable business day CDR I7<Go>.
- Price is all-in rounded to two decimals, inclusive of USD adjustment and accrued interest. Fourteen day ex-dividend period.
- Settlement is T+1.

## 1453: Brazil International I/L Bonds

- Used for global bonds and Eurobonds linked to the IPCA consumer price index (BZCLVUE <INDEX>). Quoted in a percentage of par value.
- Bonds are all-in priced, inclusive of accrued interest, inflation variation and the USD/BRL exchange rate.
- The day count is based on the number of business days in a year, equal to 252 days.
- The coupon is calculated on an exponential basis, and the inflation index is accounted for on a pro-rata basis.
- Cash flow amounts vary depending on the number of business days in a determined period.
- Coupon payments and the redemption amount are linked to the USD/BRL spot exchange rate, and to a consumer price index variation.
- Inflation adjustment follows the NTN-B methodology. See calc 1193 definition.

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## 1455: Current Coupon Floater

- Used for floaters with valuation conventions similar to fixed coupon bonds. The formula calculates a yield for a given price rather than a discount margin.
- Current coupon can be used as the projected cash flow.
- On YA, BXT and CSHF users can override future projected coupons using the assumed coupon field.
- Price, yields and accrued are not rounded by default. However individual securities may apply rounding, depending on the conventions for that security.
- Yields are compounded on the same frequency as the coupon frequency. Except for the last period where simple yield is applied
- Discount Margin equivalent is calculated by applying an assumed rate equal to assumed coupon - quoted margin.
- When used with ACT/365 or ACT/360 cash flows are adjusted on an day count basis, other day counts will apply cash flows calculated on a coupon rate / coupon frequency basis.

## For Chinese domestic securities

- Day count is NL/365 for Shanghai or Shenzhen listed securities
- China interbank listed securities pay coupons on an ACT/ACT or ACT/360 basis. However both types are discounted on an ACT/ACT basis..
- The year basis for the simple yield in the last period is determined as the number of days in a year from the penultimate coupon to one year later.
- Projects future coupons as benchmark plus spread.
- On YA, BXT and CSHF users can override future projected coupons using the assumed rate field For Chinese domestic bonds it applies domestic conventions listed below
- For China Interbank listed bonds BXT allows users apply CFETS price and yield rounding of 3 decimals
- For Shanghai or Shenzhen listed bonds coupon amounts are calculated on a coupon/coupon frequency basis
- For Shanghai or Shenzhen listed bonds accrued interest is calculated on an NL/365 basis inclusive of both the settlement and previous coupon. Note this will result in one day of interest for settlement on a payment date.
- For sinking fund bonds that start to sink after 3/10/14, the price may be inclusive of the sink factor
- Settlement is T+0 for Shanghai or Shenzhen listed bonds reflecting when the bond transfers to the buyer
- Settlement is T+1 for China Interbank bonds

## HKD Securities linked to CPI

- Pay dates are dumped on a modified following business day basis and cash flow amounts are calculated on an ACT/365 basis on those adjusted periods.

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- These securities refix at the end of the period, the current period's coupon rate is not known until 10 business days prior to the coupon. It is the HKMA's convention to always apply the estimated coupon in the price/yield formula regardless of whether the coupon is known. The estimated coupon for the first period is provided by the HKMA. The estimate coupon for subsequent periods is the previous period's coupon.
- CSHF will display the estimated interest payment for settlement dates where the rate is not known and the actual interest payment for settlement dates where the payment is known.

## 1459: Intra-Period Factor

- Used for fixed rate bonds with no scheduled sinking fund where an unscheduled amortization occurs within a coupon period.
- Calculates price/yield on a street convention basis.
- Compounding basis is the same as coupon frequency.
- Accrued interest and coupon cash flows are adjusted for all factor changes resulting from the amortizations.
- Invoice Principal Amount is adjusted for the current factor. Price is exclusive of the current factor.

## 1463: Chilean Corporate Bonds

- Used for fixed-rate bullet or sinking fund bonds.
- Used for securities denominated in Peso (CLP) or Unidades de Fomento (CLF).
- Yields as calculated on an annual basis on an ACT/365 or ACT/360 day count discount basis.
- Price is Dirty in percentage form.
- Invoice displays accrued for informational purposes.
- For CLF denominated securities the payment invoice appears in both Chilean pesos (CLP) and Unidades de Fomento (CLF) by converting the CLF amounts into CLP.
- For CLF denominated securities the payment invoice appears in both Chilean pesos (CLP) and Unidades de Fomento (CLF) by converting the CLF amounts into CLP.
- Coupon payments are calculated as effective coupon \* 100 par adjusted for sink factor if applicable, then typically truncated to 4 or 6 decimals depending on the terms of the individual security.
- Effective Coupon rate is calculated as  $(1 + \text{coupon rate})^{(1/\text{coupon frequency})} - 1$  rounded to 7 decimals.
- The par value is adjusted by the internal rate of return at issue of the bond (also known in Chile as 'TERA'), which is constant throughout the life of a bond and is independent of the price/yield calculation.
- Follows a T+3 settlement convention using CDR CL (Chile Calendar).

## 1469: Fixed to Variable

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- Used for bonds that are issued with a fixed coupon. Then, at some point, the coupon refixes off an underlying benchmark. It then pays that coupon rate until the next rate refix or maturity.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods unless otherwise noted where local conventions apply.
- Callable issues default to yield to next call. Some structures may default to the fixed to float flip date if that date is different from the call.
- Sensitivity Analysis (i.e., Risk, Durations, Convexity) terminates at the end of the fixed period.
- On YA, Benchmark F mode applies a rate from the forward curve to calculate the assumed variable rate coupon.
- Benchmark C mode applies the latest known rate.
- Takes into account fixed rate period information as well as current benchmark rate information for the floater period.
- Applies local conventions when used on the following: Italian domestics, Australian domestics, Canadian domestics, Japanese domestics and Samurais.
- Securities that apply this calc are adjusted to a step coupon calc once the all coupons are known.
- Note: You cannot use calculation type 1469 in Private Security Update function (PRPL) or the Private Security Update function (PPCR).

## 1471: India MIBOR Floaters Seven Day Compounding

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to current yield.
- Similar to calc 1430 in the following ways:
  - If settlement occurs on a future date, it takes the last known index and applies that rate forward.
  - Sensitivity values are calculated to the next refix date.
  - Accrued interest is calculated on an accreted basis.
  - Mibor + spread is compounded.
  - Compounded on a seven-day basis.

## 1472: India MIBOR Floaters Business Day Compounding

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily, but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to current yield.
- Similar to calc 1431 in the following ways:
  - If settlement occurs on a future date, the settlement takes the last known index and applies that rate forward.
  - Sensitivity values are calculated to the next refix date.
  - Accrued interest is calculated on an accreted basis.
  - Mibor + spread is compounded.

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- Compounding occurs on business days, and simple interest is applied on Sundays and public holidays.

## 1473: India MIBOR Floaters Seven Day Compounding MIBOR Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix daily, but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to current yield.
- Similar to calc 1432 in the following ways:
  - If settlement occurs on a future date, it takes the last known index and applies that rate forward.
  - Sensitivity values are calculated to the next refix date.
  - Accrued interest is calculated on an accreted basis.
  - The MIBOR index portion of the coupon is compounded, but the spread is not.
  - Compounded on a seven-day basis.

## 1474: India MIBOR Floaters Business Day Compounding MIBOR Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO Index) that refix Daily, but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to current yield.
- Similar to calc 1433 in the following ways:
  - If settlement occurs on a future date, the settlement takes the last known index and applies that rate forward.
  - Sensitivity values are calculated to the next refix date.
  - Accrued interest is calculated on an accreted basis.
  - The MIBOR index portion of the coupon is compounded, but the spread is not.
  - Compounding occurs on a business day basis, and simple interest is applied on Sundays and public holidays.

## 1475: India MIBOR Floaters Seven Day Compounding Spread Only

- Used for Indian bonds linked to the NSE Interbank rate (NSERO index) that refix daily, but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to current yield.
- Similar to calc 1434 in the following ways:
  - If settlement occurs on a future date, it takes the last known index and applies that rate forward.
  - Sensitivity values are calculated to the next refix date.
  - Accrued interest is calculated on an accreted basis.
  - The spread portion of the coupon is compounded, but the MIBOR index portion is not.
  - Compounded on a seven-day basis.

## 1476: India MIBOR Floaters Business Day Compounding Spread Only

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- Used for Indian bonds linked to the NSE Interbank rate (NSERO index) that refix, but pay on a quarterly, semi-annual, or annual basis.
- Calculates price to current yield.
- Similar to calc 1435 in the following ways:
  - If settlement occurs on a future date, it takes the last known index and applies that rate forward.
  - Sensitivity values are calculated to the next refix date.
  - Accrued interest is calculated on an accreted basis.
  - The spread portion of the coupon is compounded but the MIBOR index portion is not.
  - Compounding occurs on a business day basis, and simple interest is applied on Sundays and public holidays.

## 1478: German Bundesschatzbriefe Type B

- These zero coupon government bonds have a daily put option after one year.
- Trade tickets calculate the daily put price, which accretes according to a schedule of stepped rates.
- Yield calculated is annual compounding yield-to-maturity.
- *Note:* If you enter YA <Go>, the Buy Ticket function (BXT) appears by default.

## 1479: Georgia Treasury Bonds. Bonds Pay Fixed Coupons

- Calculates compound yield on the same frequency as the coupon frequency.
- No rounding is applied to price, yield, or accrued.
- Follows the price/yield formula provided by the National bank of Georgia.

## 1481: Israel Government Floating Rate Bonds

- Prices are dirty.
- Yields are calculated on an annual compounding ACT/365 basis.
- Coupon rates are calculated on a weighted average yield of the 12 months MAKAM T-Bills. Enter MAK5DAY <INDEX> <Go> to view daily values.
- Coupon dates occur on the last business day of the month.
- Accrued interest appears on invoices for informational purposes only. It is rounded to 5 decimals on 100 par and applies ex-dividend conventions.
- Ex-dividend dates occur the 20th day of every payment month bumped to the next business day if it 20th is a non-business day.
- Coupon cash flows are calculated on an ACT/365 day count rounded to 5 decimals on 100 par.
- Settlement is T+1 off of CDR I7, Israel Banking Holiday.
- Accrued interest is calculated as follows:

$$AI = \text{Face}/100 * Y$$



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$$Y = C * D/T$$

$$C = 100 * R * T/365$$

Where:

AI = Accrued Interest  
 D = accrued days  
 T = actual days in period  
 R = annual coupon rate in decimal form  
 C = cash coupon on 100 par rounded 5 decimals  
 Y = cash accrued on 100 par rounded 5 decimals

## 1483: Catastrophe Insurance Floaters Linked to a Money Market Fund

- These securities float off of the return of a money market index and the coupon rate resets at the end of the period.
- The best proxy of this money market fund is the three month T-bill.
- This benchmark is used for analysis purposes.
- Accrued interest is calculated off of the fixed spread only.
- Price/DM uses calc 21 conventions.
- Cash flows are projected using a flat assumption for the three month T-bill rate.

## 1484: CAT Bonds with a Long Last Coupon

- Catastrophe bonds with a long last coupon.
- Handles step spreads
- See calc 1483 for other conventions

## 1486: Floating Revolver.

- Default Settlement driven by Region (DS224). T+7 for US, LAT AMER and CANADA. T+10 for EURO, ASIA/PAC RIM and MIDDLE EAST/AFRICA.
- Day Count:
  - GBP, CAD, HKD, AUD Currency = ACT/365
  - Reset Index TIBOR = ACT/365
  - All others = ACT/360

## 1487: Russian Floater

- Used for Russian domestic floating rate bonds.
- Workout defaults to yield to next payment date
- The coupon pays on a 91 day or 182 day basis.

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- Price, yield, and accrued are rounded to two decimal places. For sinking fund bonds accrued interest is multiplied by the factor and then rounded to two decimal places.

## 1489: Compound Interest

- Used for bonds that pay coupons at maturity on a compounded basis and bonds that compound interest for a period of time, then pay cash on a regular schedule until maturity
- The coupon rate can be compounded on an annual, semi-annual, quarterly or monthly basis depending on coupon frequency
- Prices are clean.
- Accrued interest is calculated on the compound value of the coupon at the time of settlement. Accrued days are number of days from interest accrual to current settlement
- For bonds that compound for a period of time, then pay cash, the first coupon date represents the first compounding date
- The following attributes are applied to INR denominated securities
- The yield is calculated on an Act/365 annual compound basis regardless of coupon frequency or day count of the bond. For bonds where first payment is at maturity, the yield calculation changes to simple yield when settlement occurs within one year of maturity. For bonds that start paying coupons before maturity the yield calculation changes to simple when settling in the last period
- YA displays an XIRR yield equivalent, which is annual compounding using an ACT/365 day count throughout the life
- Applies ex-dividend conventions, ex-dividend periods may vary. This means that when settlement occurs in an ex period, the current period's cash flow will be excluded from the present value and the accrued will be a negative value.
- The Primary ACT/ACT convention is Days in Period / 366, if February 29th is included in the period, and Days in Period / 365 if not. However, it is also used for other ACT/ACT conventions including ICMA ACT/ACT or ACT/ACT defined as Days/365 if the end date occurs in a non-leap year, and Days/366 if the end date occurs in a leap year.

## 1492: Philippines Fixed to Variable Bonds

- Used for bonds that pay a fixed coupon for one or more periods then switch to a variable coupon.
- Users can override the default variable coupon on YA.
- Applied street convention price/yield calculations.
- Yields are rounded to six decimals.
- Invoice amounts are adjusted for withholding tax.
- Tax rate defaults to 20%.
- Settlement is T+3.

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## 1495: Dominican Republic I/L Bonds

- Used for inflation-linked bonds that pay a fixed coupon rate plus inflation variation.
- Cash flows are calculated and discounted back using an ACT/365 day count convention.
- Inflation variation is calculated by summing up the monthly percentage variation of inflation during any coupon period.
- Coupon rate is never less than zero, even if inflation variation is higher than the fixed coupon rate.

## 1497: Chile Government Strips

- Used for zero-coupon, inflation-linked strip bonds issued in CLF <CRNCY> (Unidades de Fomento).
- Principal is discounted back using an ACT/365 day count convention.
- Yield is calculated for cash prices in CLF. CLP Adjusted Yield is the CLF yield adjusted to CLP <CRNCY> using an inflation assumption. The payment invoice converts CLF <CRNCY> amounts into CLP <CRNCY> amounts.

## 1502: Cash Flow Based Sink

- Used for sinking fund bonds that can not be accommodated through another calc.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Applies yield to average life par for all workout flags

## 1504: Taiwan Government Bonds

- If the trade date occurs in the when issued period, local when issued trade conventions are applied.
- If the trade date occurs after the when issued period, standard conventions apply.
- Yields are calculated on a compounded basis, including the last period.
- Prices appear with four decimal places, but trade numbers are calculated from unrounded values.

## 1508: Muni Tax Credit Bond

- Used for fixed rate bonds where some or all of the interest paid out comes from tax credits paid to the holder.
- Credits accrue like a regular cash coupon, and supplemental and cash coupons will be added together for all calculations.
- Same as muni calc 46 for price/yield and accrued interest.

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- Can handle sinking fund payments on CSHF (so long as payments occur on coupon dates).

## 1509: Fixed Rate Term Loans

- Default Settlement driven by Region (DS224). T+7 for US, LAT AMER and CANADA. T+10 for EURO, ASIA/PAC RIM and MIDDLE EAST/AFRICA.
- Day Count:
  - GBP, CAD, HKD, AUD Currency = ACT/365
  - Reset Index TIBOR = ACT/365
  - All others = ACT/360

## 1510: Peru Inflation Adjusted Bonds

- Used for VAC linked government bonds.
- Priced on a clean basis unadjusted for inflation.
- Yields are calculated on an annual basis.
- Discount periods are calculated on an ACT/360 Basis.
- Invoice amounts are adjusted for the VAC factor at settlement.
- Interest cash flow are calculated annual coupon / Coupon Frequency \* VAC factor at settlement. On broken periods annual coupon \* days in the period /360 \* VAC factor at settlement.
- Accrued is calculated on an ICMA ACT/ACT basis , except for broken periods where its calculated on an Act/360 basis.
- VAC Factor at settlement = VAC value at settlement date / VAC value at issue date (PRVAC Index).
- Nominal yield is calculated assuming an inflation assumption from (PRCPYOY Index). However this assumption can be overridden on SWIL4.

## 1514: Stepped Spread Floater

- Cash flow and price/discount margin calculations take into account steps in floating rate spread/quoted margin during the life of the bond.
- Calculates price to discount margin. Discounts first period on a simple yield basis at index to next refix plus discount margin. Discounts all future periods on a compound basis at assumed rate plus discount margin. Discount periods are bumped and adjusted.
- Index to next refix and Repo to next refix may default to the interpolated value of the underlying benchmark curve at the time to next refix or may be simply the current value of the underlying benchmark, depending on the applicable underlying benchmark.
- Bumps and adjusts payment dates for business day convention..

## 1517: Fixed-to-Float Preferred Securities

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- Uses calc 1010-style floating rate projects to calculate yield to maturity while retaining preferred stock conventions such as dividend accretion from ex-div date to trade date, strip price/yield, and equity-style invoicing (shares \* cash price).
- Default yield is yield to next call. In Benchmark C mode, yield to maturity calculations assume all future floating rate coupon cash flows are projected at the current benchmark + spread. In Benchmark F mode all future floating rate coupon cash flows are projected at the corresponding forward rate + spread.

## 1520: Italian BTP Uplift Strips

- Yield convention is annual compounding, and bumps cash flows off of non-business days on a modified following basis inclusive of inflation.
- Cash flow is solely based on inflation adjustment of underlying BTPS cash flow (inflation adjusted cash flow - nominal cash flow = uplift redemption value).
- Inflation adjustment used in price/yield calculation is a projected value derived from applying the inflation assumption to the last known CPI compounding it to the redemption date.
- Negative inflation assumptions can result in an estimated redemption value of zero. In these scenarios, yield will display as zero for a given price, or price will display as zero for a user input yield.
- Defaults to T+2 settlement for trade date on and after Oct. 6, 2014, T+3 for prior dates.

## 1524: Taiwan CP

- Used for Taiwan zero coupon commercial paper on the <M-MKT> yellow key.
- Dirty priced.
- Yields are calculated on a simple basis, applying tax adjusted principal as the redemption value.
- Incorporates 10% tax on the accreted value.
- Accrued interest is calculated on days \* (Par-Issue Price)\* face.
- Total payment = tax adjusted principal - accrued tax.
- Accrued tax is truncated to the nearest integer.

## 1530: Turkey Zero Coupon Simple Yield Bonds

- Used for Turkish Government zero coupon bonds.
- Default yield calculation is simple interest.
- Compound yield is calculated as  $(1 + \text{simple yield rounded to 2 decimals} * \text{actual days to maturity} / 365) ^ (365 / \text{days to maturity}) - 1$ , then rounded to 2 decimals.
- Users can change the yield calculation from simple to compound through the toggle for Turkey on COVR <Go> page2. "Switch simple interest to compound?". N applies simple as the primary yield calculation, Y applies compound as the primary yield calculation. Changing this toggle will affect all securities with calc 1530. In addition it will affect all fixed rate securities with calc 1014. See calc 1014 definition for more details.

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- See calc 1014 definition for more details. YA displays both compounding and simple yields as equivalent yields, regardless of COVR setting. Settlement follows standard Turkish domestic conventions of T+0 from 00:00-13:59 Istanbul time and T+1 from 14:00-23:59 Istanbul time.

## 1532: Daily Compound Interest Paid at Maturity

- Used on short term securities that pay a fixed coupon at maturity, compounded on a daily basis.
- Yield calculated using simple interest.
- On INR denominated securities YA and BXT display an XIRR yield equivalent, which is annual compounding using an ACT/365 day count.
- Accrued interest is the daily compounded value from issue to settle date.
- Settlement defaults to T+1.

## 1534: Brazil Global Bonds

- Used for BRL denominated internationally offered fixed rate bonds.
- Primary yield is Street Convention meaning yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. In the last period simple yield is applied.
- Equivalent BD/252 yield appears on YA.

## 1541: Zero Coupon UDI Bonos

- Used for UDI strips.
- Prices in Peso adjusted using MUDIBW index.
- Yields are calculated on a simple basis.
- Settlement T+0.

## 1543: BRL International Inflation Linked All-in Priced Bonds

- Used for internationally offered BRL denominated bonds linked to IPCA.
- Priced is in percentage form inclusive of accrued and inflation.
- Day count is BD/252.
- Coupons are calculated on a compounded basis as  $((1 + \text{coupon rate})^{\text{business days in period}/252} - 1) * \text{inflation} * \text{face}$
- Inflation adjustment follows the NTN-B methodology. See calc 1193 definition.

## 1545: New Zealand Floater

- Used for New Zealand domestic floating rate notes linked to New Zealand Bank Bill Rates



# Bloomberg

- Applied NZFMA Conventions.
- Rate to next fix is an interpolated value off of the Bank Bill Swap Curve (NDBB1M Index - NDBB6M Index).
- Future coupons are estimated using interpolated value off of the curve consisting of the RBNZ official cash rate (NZOCRS Index), the Bank Bill swap rates from 1 through 6 month tenors mentioned and the NZ swap rates from 1 year to 10 year tenors (NZSWAP1 Curncy - NZSWAP10 Curncy). See ICVS, select curve number 15, remove the middle futures adjustment and change price to Mid to see rates.
- Ex-dividend trading conventions apply.
- Default settlement is T+2.

## 1547: Thailand Inflation Linked Bonds

- Used for Thailand domestic bonds linked to Thai All Items CPI.
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- The index ratio and current reference CPI are rounded to five decimals.
- Price and yield are unadjusted for inflation.
- Yield is rounded to 6 decimals.
- Invoice amounts are adjusted for inflation.
- Inflation adjusted accrued is calculated as unadjusted accrued rounded to 6 decimals on 100 \* index ratio, then rounded again to 6 decimals.
- For settlement dates 3/1/13 and prior, base and reference CPI are calculated using CPI with a 2007 base, (THCP2007 Index). For settlements past this date, base and reference CPI are calculated using a 2011 base (THCPI Index) as per TBMA conventions.
- 10 calendar day Ex-dividend period
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Yield Beta can be overridden on COVR.
- Settlement is T+2.
- Principal minimum redemption value is 100% of nominal value.

## 1551: BRL International Inflation Linked Dirty Priced Bonds

- Used for internationally offered BRL denominated bonds linked to IPCA.
- Price is in percentage form inclusive of accrued, exclusive of inflation.
- Invoice total payment = price \* index variation \* face
- Day count is BD/252.
- Standard period coupons are calculated as  $((1 + \text{coupon rate})^{(1/2)} - 1) * \text{inflation} * \text{face}$ . Short period coupons are calculated as  $(1 + \text{coupon rate})^{(\text{business days in short period} / \text{business days in standard period}) - 1} * \text{inflation} * \text{face}$ .

# Bloomberg

- Inflation adjustment follows the NTN-B methodology. See calc 1193 definition.

## 1553: Egypt Floater

- Used For Egyptian government floaters
- Coupon frequency is on a day pay basis (7, 14, 28, 91, 182, 364 days).
- Discount yield is calculated as annual yield \* days in period / 365. Discount periods are calculated as days in period (or remaining) / days in period
- Coupon payments are calculated on an ACT/365 basis.
- Assumed rate, Index to next refix and Repo to next default to the current benchmark value.
- Accrued interest calculated on an ACT/365 basis.

## 1555: Fixed Rate CDB

- Used for Brazilian CDB securities which pay a fixed rate at redemption.  
See PGM CDI <Go> for applicable programs.
- The redemption value is calculated on the daily compounded value of the fixed rate on a BD/252 basis. CETIP rounding conventions are applied.
- YA & BXT display Interest factor which is the accumulated value up until the settlement date and invoice values both gross and net of accrued tax.
- When settlement equals issue date the interest value at redemption appears on BXT.
- Principal always equals Face \* 100%. Changing price only affects the accrued value by factoring the rate. For example a 5% rate with a price of 90 means that the interest accrued to settlement is equal to the daily compounded value of .05\*9.
- Settlement defaults to T+0

## 1556: CDB DI + Spread

- Used for Brazilian Money Market (such as CDBs) and Asset Backed securities (such as LCA and LCI) that pay DI (BZDIOVRA Index) plus a spread at redemption. For money market programs, see PGM CDI <Go>. For asset backed securities, please use PPCR1 => 34) Brazilian Corps.
- The redemption value is calculated on the daily compounded value of DI plus the applicable spread in basis points on a BD/252 basis. CETIP rounding conventions are applied.
- YA & BXT display Interest factor which is the accumulated value up until the settlement date and invoice values both gross and net of accrued tax.
- When settlement equals issue date the estimated interest value at redemption and estimated return appear on YA & BXT.
- Principal always equals Face \* 100%. Changing price only affects the interest accrued by factoring the daily DI value. For example if the DI rate for a particular day is 8% and the entered price is 90, the interest factor will be calculated assuming the DI rate for that day is .08\*9 + spread for that security.

# Bloomberg

- Settlement defaults to T+0.

## 1557: CDB Percent of DI

- Used for Brazilian Money Market (such as CDBs) and Asset Backed securities (such as LCA and LCI) that pay a percent of DI (BZDIOVRA Index) at redemption. For money market programs, see PGM CDI <Go>. For asset backed securities, please use PPCR1 => 34) Brazilian Corps.
- The redemption value is calculated on the daily compounded value of DI factored by the applicable percent on a BD/252 basis. CETIP rounding conventions are applied.
- YA & BXT display Interest factor which is the accumulated value up until the settlement date and invoice values both gross and net of accrued tax.
- When settlement equals issue date the estimated interest value at redemption and estimated return appear on YA & BXT.
- Principal always equals Face \* 100%. Changing price only affects the interest accrued by factoring the daily DI value. For example if the DI rate for a particular day is 8% and the entered price is 90, the interest factor will be calculated assuming the DI rate for that day is  $0.08 * 90$  the percent of DI for that security.
- Settlement defaults to T+0.

## 1558: Accreted Sink

- Used for zero coupon bonds with pro-rata sinking funds where the sink amount is taken out at the accreted value at the time of sink.
- Primary yield is calculated on an average life basis, compounding for all periods except the last period. In the last period simple yield is applied.
- Price is exclusive of the nominal principal factor
- Accreted sink value is nominal value of sink amount \* accreted value.
- Accreted value is calculated as  $1 / ((1 + \text{accretion rate} / \text{compound frequency})^{(\text{days to maturity} / (\text{days in year} / \text{compound frequency}))})$  where days are calculated according to the corresponding day count.
- Sum of nominal sinks equals the issue amount of the security. The sinking fund values displayed on the DES schedules page reflect the nominal principal sink amounts.
- CSHF displays the actual accretion adjusted principal cash flows.
- Default settlement is T+3.
- For Securities with both an optional and mandatory sink such as ED917035 and ED835545 YA, CSHF and SF incorporate a workout flag Mandatory sink to maturity. This flag makes the assumption all optional sinks up until current settlement were satisfied and the remaining outstanding will be redeemed via the terms of the mandatory sink. The terms of the mandatory sink indicate that the remaining nominal amount will be redeemed in a way where the accreted values of the nominal sinks must be equal.

## 1560: India Odd Cpn Method

- Used for India fixed rate bonds with odd first and second coupons.
- Yield is calculated on an annual compound basis regardless of coupon frequency. The last period is calculated on a simple yield basis.
- Discount periods are calculated on an ACT/365 basis.
- Price and Yields are rounded to four decimal YA displays an XIRR yield equivalent, which is annual compounding using an ACT/365 day count.
- May be applied to securities with or without ex-dividend conventions. Ex-dividend periods may vary. If ex-dividend conventions apply then when settlement occurs in an ex-period, the current period's cash flow will be excluded from the present value formula and the accrued interest will be a negative value.
- May be applied to securities where the first or second long period cash flow is calculated on a simple or compound basis.
- The Primary ACT/ACT convention is days in period / 366, if February 29th is included in the period, and days in period / 365 if not. However, it is also used for securities where ACT/ACT is defined as days/365 if the end date occurs in a non-leap year, and days/366 if the end date occurs in a leap year.

## 1561: Italian BTPI Bond

- Used for bonds linked to the inflation rate of the Italy CPI FOI excluding tobacco, (ITCPIUNRV Index)
- Yield convention is annual compounding and bumps cash flows off of non-business days on a modified following basis.
- Price is exclusive of inflation
- Equivalent to nominal calc type 523.
- Inflation adjustment or index ratio for accrued interest and invoice adjustment purposes equals reference CPI / base CPI. These values appear on YA & YAS.
- Reference CPI for accrued interest and invoice adjustment is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Note this value may be less than the base CPI value resulting in an index ratio may be less than 1. This index ratio is displayed on YA.
- Base CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the coupon period start date. For accrued interest and invoice adjustment purposes this value can be less than the previous period's base CPI.
- Prices are clean, in percentage form, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- $\text{Accrued} = (100 * (\text{Annual Interest Rate in decimal form} / \text{Payment Frequency})) * (\text{number of days accrued} / \text{number of days in period}) = x$  [round to 5 decimals], then  $((\text{nominal value}/100) * x) * \text{index ratio}$ .

# Bloomberg

- Settlement is T+3.
- Inflation uplift on principal is paid out every coupon period. At maturity, the principal payment will equal the inflation uplift for that period plus the nominal amount.
- Holders that hold the security from issue date to maturity are entitled to an additional .4% of principal at maturity.
- Equivalent Yield with Inflation assumption assumes future cash flows are derived using the inflation assumption value.
- Projected CPI values can be overridden on SWIL4.
- Equivalent Yield with principal bonus assumes future cash flows are derived using the inflation assumption value plus the .4% bonus at maturity.
- Inflation adjustment for both coupon and principal is measured on growth over each coupon period. In addition, this adjustment is floored at zero. Therefore, when determining inflation adjustments for current and future projected cash flows, the applicable base CPI can never be lower than previous base CPI values and the reference CPI cannot be lower than the corresponding base CPI. Yield with inflation assumption and yield with bonus principal apply this convention and may be different than the base & reference CPI that appear on DES

## 1566: Turkey Adj Pay FRN

- Used for Turkish corporate bonds linked to compound treasury yields.
- Prices are rounded to 3 decimals
- Yields are calculated on an annual compound Act/365 basis.
- Future cash flows are projected assuming the current coupon rate. This is displayed on YA, BXT and CSHF as Assumed Cpn. Users can override this value.
- Coupons cash flows may be rounded depending on the terms of individual security
- Coupon rates on DES and in the Assumed coupon rate field are displayed on an annual simple yield basis + spread, For bonds with an Act/365 day count this is calculated as  $((1 + \text{compound yield} / 100)^{(\text{days in period} / 365)} - 1 + \text{quoted margin} / 10000 * \text{days in period} / 365) * (365 / \text{days in period}) * 100$ . For Act/Act bonds  $((1 + \text{compound yield} / 100)^{(1/12)} - 1) * 12 + \text{quoted margin} / 10000 * 100$
- For Act/365 bonds accrued is calculated as follows: coupon rate (as described above) \* days in period / 365 = periodic coupon. Periodic coupon is then rounded as per the terms of the individual security. Accrued interest = rounded periodic coupon \* accrued days / days in period \* face. For Act/Act bonds accrued is calculated as follows: coupon rate (as described above) / coupon frequency = periodic coupon. Periodic coupon is then rounded as per the terms of the individual security. Accrued interest = rounded periodic coupon \* accrued days / days in period.
- User can also value these securities using the 2 year compound yield benchmark rate (IECM2Y Index) as the reference rate to project future coupons. This yield appears on YA and CSHF as Bench Yld. Users can override this reference rate. This value appears on YA and CSHF as Bench Rate. Note, for this calculation future coupon rates are calculated as  $(\text{reference rate} / 100 + \text{quoted margin} / 10000) * (\text{days in period} / 365) * \text{face amount}$ . The reference rate is not de-compounded before adding spread.



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- Settlement follows standard Turkish domestic conventions of T+0 from 00:00-13:59 Istanbul time and T+1 from 14:00-23:59 Istanbul time.

## 1571: India Ex-dividend Floater

- Used for Indian Government floaters
- Follows FIMMDA formula,
- Calculates price to discount margin. First discount period is calculated as remaining period using an ISMA 30/360 day count. The second period is discounted using a discount period of 2, All subsequent periods are incremented by 1. Sum of these present values equals clean price.
- Price is rounded to 4 decimals
- Discount margin is displayed in basis point form and rounded to 4 decimals.
- Settlement is T+1

## 1573: Spanish Government Inflation Linked

- Used for Spanish domestic government inflation linked bonds
- Calculates yields on an annual compound basis for all periods including when settling in the last period
- When the maturity date falls on a non-business day, for discounting purposes the maturity date is bumped to the next business day and the last period is calculated days in the adjusted period / days in the standard period. Accrued and cash flow amount at not adjusted.
- Accrued interest is calculated ACT/ACT.
- Price is exclusive of inflation
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 2 and 3 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Prices are clean, exclusive of inflation, therefore total payment equals  $(\text{price}/100 + \text{accrued}) * \text{index ratio} * \text{face}$ .
- $\text{Accrued} = \text{Real Coupon} / \text{coupon frequency} * (\# \text{ of days accrued} / \# \text{ of days in period}) * \text{nominal value} * \text{index ratio}$ .
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4.
- Yield Beta can be overridden on COVR.
- Principal minimum redemption value is 100% of nominal value.
- Settlement was T+3 previous to Oct 6, 2014 and T+2 business days after.

## 1577: Delayed Pay

- Used for fixed rate bonds where the payment is delayed for more than a day after the end of the corresponding accrual period.
- Yields are calculated on a compounded basis on the same frequency as the coupon frequency for all periods except the last period. Simple yield is applied in the last period.

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- Discounting periods are determined considering the dates the payments are actually paid.
- For ICMA ACT/ACT bonds, the days in period for the basis is determined using the accrual period, not payment periods.
- Accrued is calculated from previous accrual date to settlement.
- Default settlement is T+2 for CSDR EU T+2 applicable securities, T+3 for all others. However, there may be individual securities that apply their own specific market convention.

## 1578: Russian Domestic Floater

- Used for Russian Ruble domestic floaters
- Can be used for day pay structures such as every (91, 182 364 etc...) or standard pay structures where the coupon falls on the same day of the month, 3,6, or 12 months apart.
- Yields are compounded on an annual basis.
- Day count is Act/365
- Price and yield are rounded to two decimal places.
- Accrued interest is rounded to 2 decimals on 1000 par before being multiplied by number of bonds. However, the methodology is slightly different between government and corporate securities.

Government bond accrued formula:

periodic coupon = annual coupon rate \* days in period /365 \*1000 \* principal factor rounded to 2 decimals

accrued interest = periodic coupon \* accrued days /days in period rounded to 2 decimals

Corporate bond accrued formula:

accrued interest = annual coupon rate \* accrued days /365 \* 1000 \* principal factor rounded to 2 decimals

- The yield to worst calculations default to the next workout date of put, call or maturity regardless of input price.
- For ticker RFLB, applies T+0 settlement for trade dates previous to 6/1/15 and T+1 after. Corps apply T+0 settlement.

## 1579: Russian Inflation Linked Bond

- Used for Russian Ruble domestic bonds linked to Russian CPI (RUCPNL Index)
- The coupon pay dates are 182 days apart.
- Yields are compounded on an annual basis
- Price is rounded to 4 decimals.
- Prices are clean, exclusive of inflation, therefore total payment equals (price/100 + accrued) \* index ratio \* face.
- Accrued interest is calculated on 1000 par before being multiplied by number of bonds.

# Bloomberg

- $\text{Accrued Interest} = \text{annual coupon rate} * \text{accrued days} / 365 * 1000 \text{ par} * \text{index ratio rounded to 2 decimals}$
- Inflation adjustment or index ratio equals reference CPI / base CPI.
- Reference CPI is calculated as the interpolated value of CPI for 3 and 4 months prior to the applicable settlement date. Base CPI is the reference CPI on interest accrual date.
- Default Inflation assumption is reference CPI at settle / reference CPI from 1 year prior -1. However users can override this with their own assumptions through SWIL4
- Principal minimum redemption value is 100% of nominal value
- Settlement is T+1

## 5593: Interest Bearing Commercial Paper

- Used for discount quoted instruments that traded at par.
- Converts a discount rate into a simple money market yield that is paid at redemption.