

Market Convention

Thai Bond Market (Update 1-Apr-2020)

1. Pricing Formula for Fixed Rate Bond

a. Straight bond (Normal) :

$$Gross\ price(\%) = \sum_{i=0}^{n-1} \frac{\frac{g}{H}}{\left(1 + \frac{y}{100 \times H}\right)^{\left(i + \frac{DSC \times H}{365}\right)}} + \frac{100}{\left(1 + \frac{y}{100 \times H}\right)^{\left(n-1 + \frac{DSC \times H}{365}\right)}}$$

b. Straight bond (First Odd) :

$$Gross\ price(\%) = \frac{\left(g \times \frac{DIC}{365}\right)}{\left(1 + \frac{y}{100 \times H}\right)^{\left(\frac{DSC \times H}{365}\right)}} + \sum_{i=1}^{n-1} \frac{\frac{g}{H}}{\left(1 + \frac{y}{100 \times H}\right)^{\left(i + \frac{DSC \times H}{365}\right)}} + \frac{100}{\left(1 + \frac{y}{100 \times H}\right)^{\left(n-1 + \frac{DSC \times H}{365}\right)}}$$

c. Straight bond (Last Odd) :

$$Gross\ price(\%) = \sum_{i=0}^{n-2} \frac{\frac{g}{H}}{\left(1 + \frac{y}{100 \times H}\right)^{\left(i + \frac{DSC \times H}{365}\right)}} + \frac{100 + \left(g \times \frac{DCD}{365}\right)}{\left(1 + \frac{y}{100 \times H}\right)^{\left(n-2 + \frac{(DSC + DCD) \times H}{365}\right)}}$$

d. Coupon at Maturity* (BEY) :

$$Gross\ price(\%) = \frac{CF}{\left(1 + \frac{y}{200}\right)^{\left(n-1 + \frac{DSC \times 2}{365}\right)}}$$

e. Amortizing bond:

$$Gross\ price(\%) = \sum_{i=0}^{n-1} \frac{CF_i}{\left(1 + \frac{y}{100 \times H}\right)^{\left(i + \frac{DSC \times H}{365}\right)}}$$

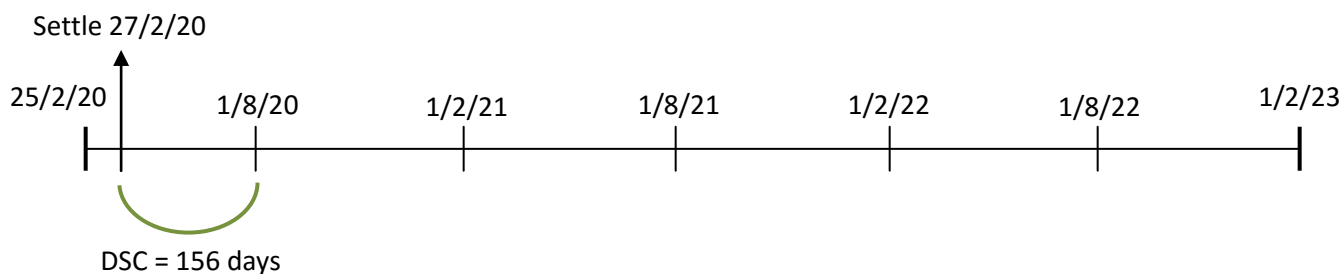
2. Pricing Formula for Floating Rate Note (FRN) :

$$Gross\ price\ (\%) = \frac{1}{\left[1 + \frac{(I + DM)}{100 \times H}\right]^{\left(\frac{DSC \times H}{365}\right)}} \times \left(k + \sum_{i=1}^{n-1} \frac{(I + QM)}{H} \left[1 + \frac{(I + DM)}{100 \times H}\right]^i + \frac{100}{\left[1 + \frac{(I + DM)}{100 \times H}\right]^{n-1}} \right)$$

3. Pricing Formula for Long-Term Zero-Coupon Bond* (BEY) :

$$Gross\ price\ (\%) = \frac{100}{\left(1 + \frac{y}{200}\right)^{\left(n-1 + \frac{DSC \times 2}{365}\right)}}$$

Example : Long-term corporate zero coupon bond has yield (BEY) 3% p.a. with issue on Feb 25, 2020 and maturity on Feb 1, 2023 is sold for settlement on Feb 27, 2020



Y = 3% , n = 6 , DSC = 27 Feb 2020 to 1 Aug 2020 = 156 days

$$Gross\ price\ (\%) = \frac{100}{\left(1 + \frac{3}{200}\right)^{\left(5 + \frac{156 \times 2}{365}\right)}}$$

$$Gross\ price\ (\%) = 91.652149\%$$

4. Pricing Formula for Short-term Instruments** (Simple yield):

$$Gross\ price\ (\%) = \frac{CF}{\left[1 + \left(\frac{y}{100} \times \frac{D}{365}\right)\right]}$$

5. Accrued Interest Calculation

a. Normal period : $AI\ (\%) = \frac{DCS \times g}{365}$

b. XI period : $AI\ (\%) = -\left(\frac{DSC \times g}{365}\right)$

6. Clean Price calculation

$$Clean\ price\ (\%) = Gross\ price(\%) - Accrued\ interest(\%)$$

7. Bond Equivalent Yield conversion

a. H-compounding Yield to BEY :

$$BEY(\%) = \left[\left(1 + \frac{YTM(\%)}{H}\right)^{\frac{H}{2}} - 1 \right] \times 2$$

b. Simple Yield to BEY :

$$BEY(\%) = \left\{ [1 + (YTM(\%) \times TTM)]^{\left(\frac{1}{2 \times TTM}\right)} - 1 \right\} \times 2$$

8. Terminology

DSC	:	Days from settlement date to next coupon date
DCS	:	Days from previous coupon date to settlement date
DCD	:	Days from last coupon date to maturity date
DIC	:	Days from issue date to next coupon date
D	:	Days from settlement date to maturity date
y	:	Yield to maturity
H	:	Number of coupon payments per year
g	:	Annual coupon rate
n	:	Number of future coupon payments
QM	:	Quoted margin (%)
I	:	Reference rate
K	:	Next coupon interest rate, which was fixed on the previous reset date
k	:	Next coupon payment, ($k = K/H$)
CF_i	:	Cash flow at period i
DM	:	Required Discounted Margin (%)
BEY (%)	:	Bond Equivalent Yield or semi-annual compounding yield
YTM (%)	:	Yield to maturity, ($YTM (\%) = y/100$)
TTM	:	Time to maturity, ($TTM = D/365$)

Note:

*For the calculation formula of long-term corporate bond that have one time cash flow, there are two basic cases.

Case 1: Plain vanilla bond

We assume coupon payment 2 times per year (semi-annual coupon payment).

Case 2: Odd bond

In case of odd bond, we assume the abnormal cash flow to be on the first period of coupon payment (called "first short-odd bond").

**Short-term Instruments mean fixed income that have issue term not more than 270 days and have one time cash flow.