

1 Fixed Income

Notation:

$$\begin{array}{ll} \text{Price of the bond} & P_t \\ \text{Coupon (annual rate)} & c_t^{(1)} \end{array}$$

Current Yield

$$CY_t = \frac{c_t^{(1)}}{P_t}$$

Cash flow structures:

$$\begin{array}{ll} \text{Bullet Bond} & : [-P_0 \quad I_1, \quad I_2, \quad \dots, \quad I_n + A] \\ \text{Fully Amortizing Loan} & : [-P_0 \quad I_1 + A_1, \quad I_2 + A_2, \quad \dots, \quad I_n + A_n] \\ \text{Partially Amortizing Loan} & : [-P_0 \quad I_1 + A_1, \quad I_2 + A_2, \quad \dots, \quad I_n + \frac{A}{2}] \quad \text{Balloon payment} = \frac{A}{2} \end{array}$$

Loan

Periodic payment of a loan:

$$a = \frac{r \times A}{1 - (1 + r)^{-n}}$$

where a is the periodic payment, A is the principal, r is the market interest rate per period and n are the total number of periods.

Floating Rate Note

Price of a T -year FRN with periodicity k

$$P = \sum_{t=0}^{kT} \frac{PMT_t^{(k)}}{1 + r_t^{(k)}}$$

with:

$$\begin{aligned} PMT_t^{(k)} &:= MRR_t^{(k)} + QM^{(k)} = \frac{MRR_t^{(1)}}{k} + \frac{QM^{(1)}}{k} \\ r_t^{(k)} &:= MRR_t^{(k)} + DM_t^{(k)} = \frac{MRR_t^{(1)}}{k} + \frac{DM_t^{(1)}}{k} \end{aligned}$$

where recall that the market reference rate, quoted margin and discount margins are usually quoted in annual terms: $MRR_t^{(1)}, QM^{(1)}, DM_t^{(1)}$