Amortizing Bond Explained

1. Amortizing Bond an Accreting Bond Introduction

- Amortizing Bond is a bond that periodically pays coupon payments and principal repayments. Once the bond reaches its maturity, the entire par/face value payment will all be paid off.
- The principal of amortizing bond decreases due to repaying part of the principal along with the coupon payments.
- Each payment to the amortizing bond holder consists of a portion of interest and a portion of principal.
- Scheduled amortization (or accretion) refers to the decrease (or increase) in notional quantity over the life of the valuable on defined dates.

2. The Use of Amortizing Bonds and Accreting Bonds

- An amortizing bond is used specifically for tax purposes as the amortized principal is treated as part of a company's interest expense.
- The issuer credits the amortized principal amount to interest payable, i.e., an accrued liability.
- The present value of an amortizing instrument is valued by discounting the future cash flows. If interest payments are capitalized, the accrued interest payments for the current period will be added to the remaining balance of principal at the period ending date.

3. Valuation

- Suppose the current valuation date is *t*. The principal cash flow amount is *Cfa_i* **,** The finial principal payment is.

$$Cfa_n = N - \sum_{k=1}^{n-1} Cfa_k$$

- The outstanding principal N*j* on each coupon date is

$$N_j = \begin{cases} N - \sum_{k=1}^{j-1} Cfa_k & if \ \ j = i+1, i+2, \cdots, n \\ N & j = 1 \end{cases}$$

- The future cash flow amounts are equal to the sum of **Principal Cash-flow** and **Interest Cashflow.**

$$Cf_j = Cfa_j + CfI_j \qquad j = i+1, \cdots, n$$

- The value of an Amortizing Bond is the present value of all the future cash flows. Thus,

$$\text{Value} = \sum_{j=i+1}^{n} Cf_j \cdot df(t, t_j)$$

- The price of a bond is calculated as the value of a bond less accrued interest, i.e.

$$\text{Price} = \text{Value} - AI = \sum_{j=i+1}^{n} Cf_j \cdot df(t, t_j) - AI$$

- The accrued interest rate *AI* is

$$AI = \begin{cases} CfI_1 \dfrac{t - t_i}{t_{i+1} - t_i} & if \quad t_i \le t < t_{i+1} \\ CfI_1 \dfrac{t - t_0}{t_1 - t_0} & if \quad t_0 \le t < t_1 \end{cases}$$

You can find more details at

http://localhost/lib/EqCppi.html