Fixed-Income Investments

Cheat Sheets

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Fixed-Income Investments

FIXED-INCOME SECURITIES

Conversion ratio	**Conversion ratio =** $\frac{\text{Par value}}{\text{Conversion price}}$
Conversion value	**Conversion value =** Share price x Conversion ratio
Conversion premium/ discount	**Conversion premium/ discount** = Convertible bond price – Conversion value

INTRODUCTION TO FIXED-INCOME VALUATION

Fixed-rate bonds

$$\textbf{PV} = \frac{\text{PMT}}{(1+r)^1} + \frac{\text{PMT}}{(1+r)^2} + \ldots + \frac{\text{PMT} + \text{FV}}{(1+r)^N}$$

PV = Present value (price)
PMT = Coupon payment amount per period
r = Discount rate
N = Number of periods to maturity
FV = Face value/par value/future value

$$\textbf{PV} = \frac{\text{PMT}}{(1+Z_1)^1} + \frac{\text{PMT}}{(1+Z_2)^2} + \ldots + \frac{\text{PMT} + \text{FV}}{(1+Z_N)^N}$$

PV = Present value (price)
PMT = Coupon payment amount per period
Zn = Spot rate per period
N = Number of periods to maturity
FV = Face value/par value/future value

PVFlat = PVFull - AI

$$\textbf{PVFull} = \left[\frac{\text{PMT}}{(1+r)^{1-\frac{t}{T}}} + \frac{\text{PMT}}{(1+r)^{2-\frac{t}{T}}} + \ldots + \frac{\text{PMT} + \text{FV}}{(1+r)^{N-\frac{t}{T}}}\right]$$

$$\textbf{PVFull} = \text{PV} \times (1+r)^{\frac{t}{T}}$$

$$\textbf{AI} = \frac{t}{T} \times \text{PMT}$$

PVFull = Full price of a bond
PVFlat = Flat price of a bond
AI = Accrued interest
PMT = Coupon payment amount per period
N = Number of periods to maturity
T = Number of days within a coupon payment period
t = Number of days from the last coupon payment to the settlement date

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INTRODUCTION TO FIXED-INCOME VALUATION

Fixed-rate bonds

$$\left(1 + \frac{APR_m}{m}\right)^m = \left(1 + \frac{APR_n}{n}\right)^n$$

APR_m = Annual percentage rate for *"m"*
m = Periodicity that you are converting from
APR_n = Annual percentage rate for *"n"*
n = Periodicity that you are converting to

Current yield

$$\textbf{Current yield} = \frac{\text{Total PMT in a year}}{\text{Flat Price}}$$

Floating Rate Notes (FRNs)

$$\textbf{PV} = \frac{\frac{(\text{Index} + \text{QM}) \times \text{FV}}{m}}{\left(1 + \frac{\text{Index} + \text{DM}}{m}\right)^1} + \frac{\frac{(\text{Index} + \text{QM}) \times \text{FV}}{m}}{\left(1 + \frac{\text{Index} + \text{DM}}{m}\right)^2} + \ldots + \frac{\frac{(\text{Index} + \text{QM}) \times \text{FV}}{m} + \text{FV}}{\left(1 + \frac{\text{Index} + \text{DM}}{m}\right)^N}$$

PV = Present value (price) of a floating-rate note
Index = Reference rate (stated as an annual percentage rate)
QM = Quoted margin (stated as an annual percentage rate)
FV = Future value paid at maturity (par value)
m = Periodicity of the floating- rate note, or the number of payment periods per year
DM = Discount/required margin (stated as an annual percentage rate)
N = Number of evenly spaced periods to maturity

Money market instruments

$$\textbf{PV} = FV \times \left(1 - \frac{\text{Days}}{\text{Year}} \times DR\right)$$

$$\textbf{FV} = PV + \left(PV \times \frac{180}{365} \times AOR\right)$$

PV = Present value (price) of the money market instrument
FV = Future value (face/par value) of the money market instrument
Days = Number of days between settlement and maturity
Year = Number of days in the year
DR = Discount rate (stated as an annual percentage rate)
AOR = Add-on rate (stated as an annual percentage rate)

Forward rates

$$(1 + Z_A)^A \times (1 + IFR_{A,B-A})^{B-A} = (1 + Z_B)^B$$

Z_n = Spot rate
IFR = Implied forward rate


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