Advanced Managerial Finance-- BA 519 Review of Time Value of Money & Bond Valuation

Future/Present Value of Lump-Sum/Annuities; Non-Annual Compounding, Bond Valuation. Usage of Financial Calculator

Texas Instruments BAII Plus

- Calculator Settings:
  - Set Decimal Places: 9 (or your choice) {Format: 2nd, .}
  - Payments/year: 1 {P/Y: 2nd, I/Y}
- CLR TVM {2nd, FV}
  - Clears all the entries in the time value registers (keys in the 3rd row)
- CLR Work {2nd, CE/C}
  - Clears whichever spreadsheet you are in

Texas Instruments BAII Plus

- ENTER
  - It is essential to press “enter” for calculator to accept your numbers
- CPT
  - To compute the unknown variable in the problem
- Inflows (+) and Outflows (-)
- In TV of money problems, at least one CF has to be ‘+’ and one ‘-’

Future Value(FV) /Present Value (PV)

- If I pay you $100 today and another $100 in 1 year, how much total money will you have at the end of the 1st year? $200???
- NO!!
  - Can't compare/add/subtract money in different time periods!
- What is the FV of $235 @12% for:
  - 1 year? ($263.20) 4 years? ($369.78)
- Simple interest vs. compound interest

Future Value(FV) /PV-- Continued

- Manhattan for sale for $24!!!!
  - Indians received that in 1626 in Goods & Trinkets
- FV (378 years, 8%) = $103,369,100,000,000!!
  - Enough to buy the whole world….
  - Simple interest on $24 for 378 years = $725.76!!!
- The difference between simple interest and compound interest increases exponentially with time
- PV or Discounting
- PV of $145 to be recd. in 5 yrs. 8% ($98.68)

Multiple Cash Flows, Compounding Periods

- An investment offers CFs of $300, -200, & -100 starting at T=0; 10%;
  - Good investment?
  - YES, NPV = $35.54

  {Use CF worksheet: CF0 = $300, C01= -$200, F01 = 1, C02 = -$100, F02 = 1; Go to "NPV," I = 10%, ↓ CPT NPV}
- FV of $100 in 1 year @12% compounded Annually? ($112.00)
- FV of $100 in 1 year @12% compounded Semi-Annually? ($112.36)

Multiple Cash Flows, Compounding Periods-- Continued

- EAR: Rate on an annual basis that *REFLECTS* compounding effects;
- EAR = $(1+r/m)^m - 1$; FV = C_0 X $(1+r/m)^{mT}$
- EAR of @12% comp. monthly? (12.68%)

  {2nd, IConv (2nd function of number 2); 2nd CLR Work; NOM = 12, ↑, C/Y = 12, ↑, CPT EFF}

Multiple Cash Flows, Compounding Periods– Even More!

- Receive $100 in year 1, $300 in years 2 & 3, and -$50 in year 4; Find PV @ 10%
- FV of $300 in 4 yrs. @12% compounded monthly?
- PV of $400 to be received in 3 yrs. @11% compounded daily?
- EAR of @14% compounded quarterly?
- FV of $100 in 2 yrs. @12% continuously compounded?

Annuities and Perpetuities

- Annuity: A series of *equal cash flows* at *equal intervals of time.*
- Perpetuity: an infinite annuity; PV? FV?

  PV = C/r
- Growing Perpetuity: PV = C/(r-g)
  - C is the CF 1 period from today
  - In real-world, can the CFs actually grow @ constant rate forever?

How to Value Bonds?

Bonds (0 coupon, level coupons & Consols)

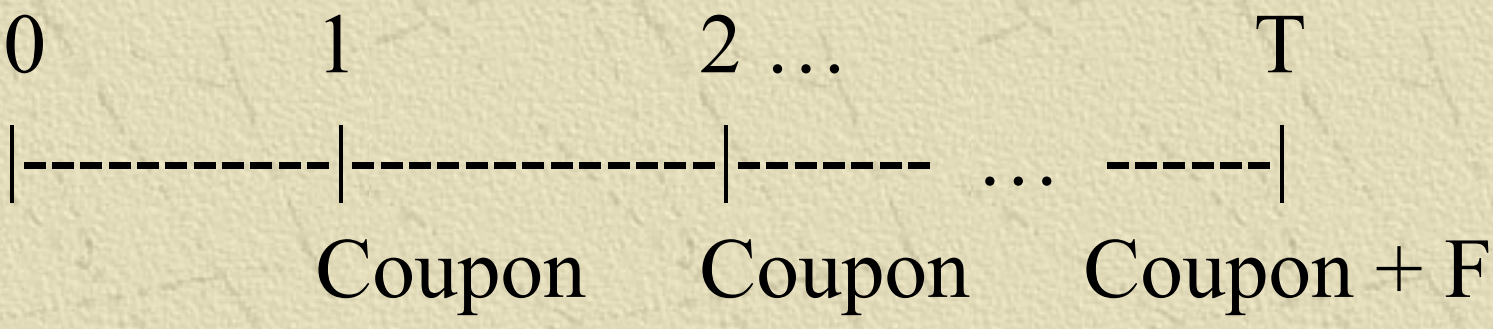
Valuation-- Bonds

- Value of any Asset:
  - PV of all future cash flows (FCFs)
    - need estimate of FCFs & discount rate
- Bond: a long-term IOU
- **Discount (0 coupon) bonds**
  - FCF is face value (F) to be received in 'T' yrs.

Bond Value = $F/(1+r)^T$

Bonds-- Continued

- **Level Coupon Bonds**. FCFs:
  1. coupons every period till maturity (annuity)
  2. face value at maturity (lump-sum)



- **Consols**: Coupon bonds with no maturity; I.e., Perpetuity

Additional Bond Concepts

- r: YTM (Yield to Maturity)
  - rate of return required by the investors
  - as r ⇧ , P ???
- Coupon rate **fixed** at the time of the issue; 'r'(discount rate/YTM) **changes** with time
  - 10% coupon, 20 yrs. maturity
    - r = 12%, value =?; Discount bond; YTM>C
    - r = 8%, value =?; Premium bond; YTM<C

Bond Concepts-- Contd.

- r=10%, value = ?; Par; YTM = C
- 7% coupon, 10 Y. bond for $932.90
  - YTM = ??
- Semiannual Coupons
- 14s of December 2014 selling for 110 on July 1, 2003