Bond Basics

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Bond Basics: Amount

- Amount
  - Face Value/ Book Value / Par Value ($1,000)
  - Price/Redemption 100 (100% of Face Value)

  - Market Value quoted as a % of Par or the Face Value (priced at 98 or 98% of $1,000 = $980.

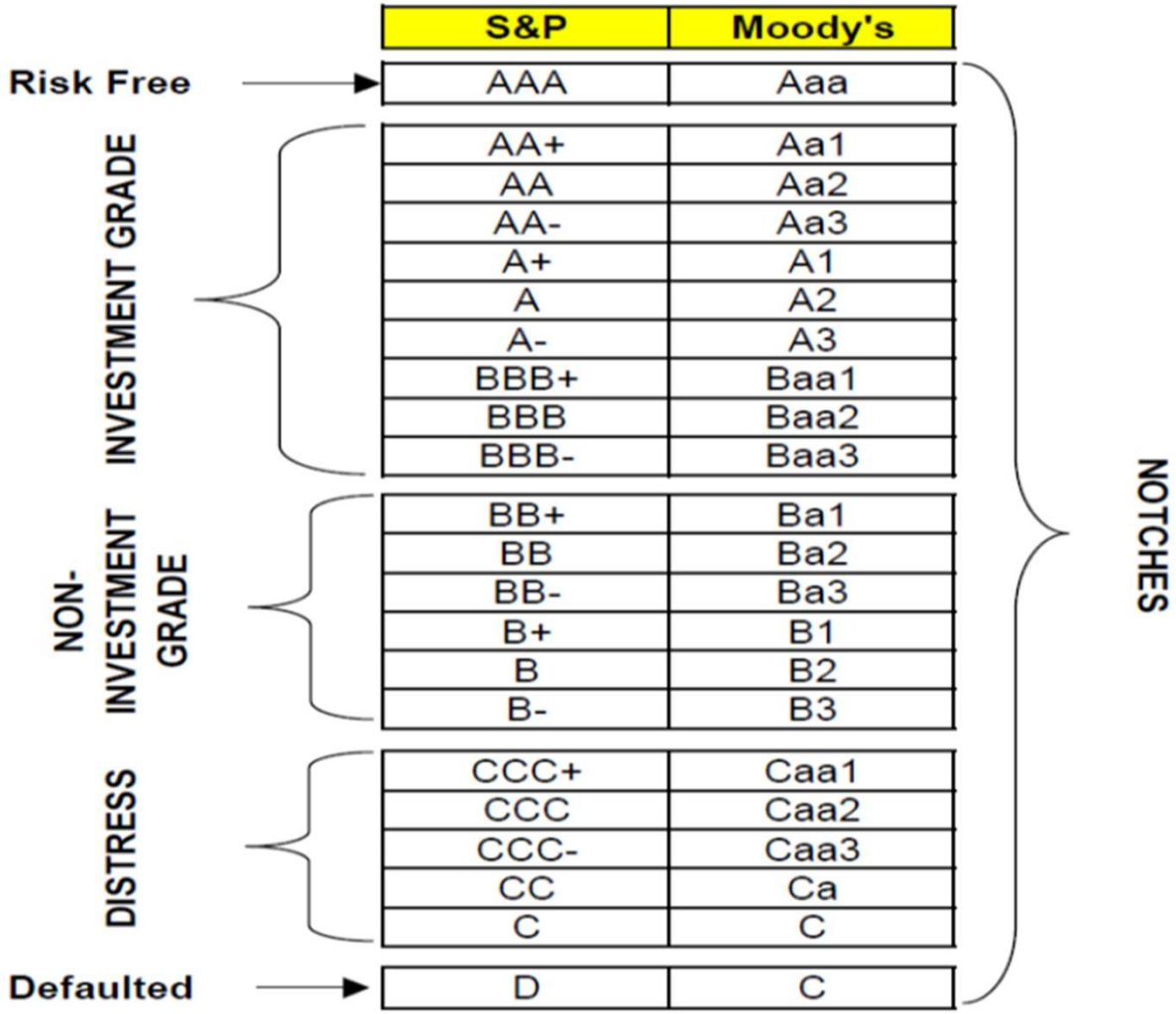
Bond Basics: Price/Interest

- Coupon Rate (Interest Rate – percentage of Par) or Coupon Payment
  - Semi Annual Payments (interest payments) – 8.0% or $40 payment every 6 months
    - J&J (Jan & July), F&A (Feb & Aug), M&S (Mar & Sep), A&O (April & Oct), M&N (May & Nov)
    - J&D (June & Dec)
      - Or J&J 15 means paid on the 15ht of January and July.
  - **<u>Accrued Interest</u>**
    - Interest due on the bond sold between coupon dates
      - Municipal/Corporate Bonds on 30/360 basis and T+3days
      - Treasury Bonds on actual days/365 days and T+1 day
      - Accrued days calculated between last Coupon Day and Settlement Day
-

Bond Basics: Maturity/Term

- Bond Maturity Terminology
  - Term Bond (0,0,0,0, 100) or Bullet maturity
  - Serial Bond (20,20,20,20,20)
  - Balloon Bond (10,10,10,10,60)
-
- Bond Redemption Features
  - Refunding Debt
  - Call protection
  - Put Feature
  - Sinking Fund

Bond Basics: Rating Bonds



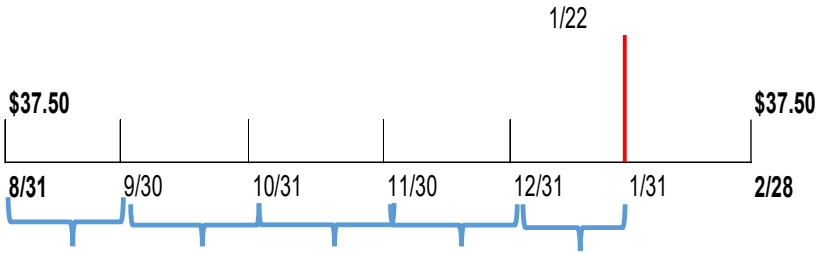
Bond Basics: Calculating Market Price and Invoice Prices

Manual Example:

Bought (Traded) F&A the 7.50% Corporate Bond at 98.50 on Thursday, January 17, 2019

Trading Date =	Thursday, January 17, 2019
Settlement Date (T+3 BD) =	Tuesday, January 22, 2019
Market Price =	98.50
Coupon Rate =	7.500%
Coupon Dates =	F&A (Feb 28 and Aug 31)
Face Value =	$1,000
Accrued Basis=	360 Days

Market Price Paid =	$985.00
Accrued Expenses =	$29.58
Invoice Price =	$1,014.58



DAYS =	30	30	30	30	22	
Total Days=	142					

Calculating Market Price & Invoice Price

MARKET PRICE / INVOICE PRICE

Manual Example:

Bought (Traded) F&A the 7.50% Corporate Bond at 98.50 on Thursday, January 17, 2019

INPUT	**Trading Date**	**Thursday, January 17, 2019**
	Settlement Date (T+3 Business Days)	Tuesday, January 22, 2019
	Market Price	98.50
	Coupon Rate	7.500%
	Coupon Dates	F&A (Feb 28 and Aug 31)
	Semi-Annual Coupon Payment	$37.50
	Face Value	$1,000
	Accrued Basis	360 Days
OUTPUT	Market Price Paid	$985.00
	Accrued Expenses	$29.58
	Invoice Price	$1,014.58

$98.50 x 10

37.50 x (142 / 180) = $29.58

Total Days	**142**

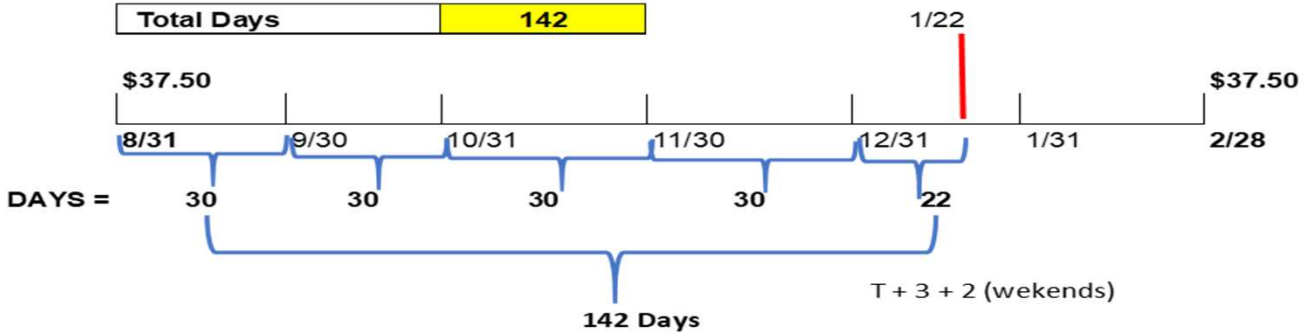


Figure 11.3

Bond Basics: Calculating Price

Using Excel

MARKET PRICE

USING EXCEL FORMULAS | **USING PRESENT VALUE CALCULATIONS**

				# Pmts	**Coupon Dates**	**Coupon Payment (CP)**	**Present Value of (CP)**	
Settlement Date=	1/15/2019			0	1/15/2019			
Maturity Date=	1/15/2024			1	7/15/2019	21.25	20.76	=+H7/((1+$D$8/2)^F7)
Coupon Rate=	4.250%			2	1/15/2020	21.25	20.28	
Yield to Maturity=	**4.740%**			3	7/15/2020	21.25	19.81	
Redemption value %=	100			4	1/15/2021	21.25	19.35	
Coupon Pmts per year=	2			5	7/15/2021	21.25	18.90	
Market Price (% Par)	**97.841**			6	1/15/2022	21.25	18.46	
				7	7/15/2022	21.25	18.04	
	=PRICE(D5,D6,D7,D8,D9,D10)			8	1/15/2023	21.25	17.62	
	=PRICE(SD,MD,CR,YTM,R,F)			9	7/15/2023	21.25	17.21	
				10	**1/15/2024**	**1,021.25**	**807.99**	
		=+$D$7/2*1000+1000				Market Value =	978.41	=SUM(I7:I16)
						Market Price =	**97.841**	

Figure 11.2

Calculating Returns using Excel (2 ways)

	B	C	D	E	F	G	H	I
2								
3	**Yield to Maturity Calculation**							
4								
5	CALCULATING THE YTM					# pmts	Remaining Dates	Cash Flow
6	Settlement Date (SD) =		1/15/2018					
7	Maturity Date (MD) =		1/15/2025			0		(961.79)
8	Coupon Rate (CR) =		4.250%			1	7/15/2018	21.25
9	**Market Price (MP) =**		**96.179**			2	1/15/2019	21.25
10	Redemption value % (R) =		100			3	7/15/2019	21.25
11	Coupon Pmts per year (Frequency (F) =		2			4	1/15/2020	21.25
12						5	7/15/2020	21.25
13	Yield to Maturity (YTM) =		4.902%	=YIELD(D6,D7,D8,D9,D10,D11)		6	1/15/2021	21.25
14				= YIELD (SD,MD,CR,MP,R,F)		7	7/15/2021	21.25
15						8	1/15/2022	21.25
16						9	7/15/2022	21.25
17						10	1/15/2023	21.25
18						11	7/15/2023	21.25
19						12	1/15/2024	21.25
20						13	7/15/2024	21.25
21						14	1/15/2025	1,021.25
22								
23							IRR =	4.902%
24								=IRR(I7:I21)*2
25								
26								Figure 11.5
27								

Current Yield, Yield to Maturity, Yield to Call, Yield to Worse

YIELD TO MAURITY (YTM), YIELD TO CALL (YTC), YIELD TO WORSE (YTW) and CURRENT YIELD (CY)

EXCEL FORMULAS

	YTM	YTC1	YTC2	YTC3	YTC4	YTC5
Issuance Date =	1/16/2017	1/16/2017	1/16/2017	1/16/2017	1/16/2017	1/16/2017
Trading Date =	Wednesday, July 11, 2018	7/11/2018	7/11/2018	7/11/2018	7/11/2018	7/11/2018
Settlement Date (T+3) (SD)	Monday, July 16, 2018	7/16/2018	7/16/2018	7/16/2018	7/16/2018	7/16/2018
Maturity Date / Call Date (MD)	1/16/2027	1/16/2018	1/16/2019	1/16/2020	1/16/2021	1/16/2022
Coupon Rate (CR)	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Market Price (MP)	98.50	98.50	98.50	98.50	98.50	98.50
Redemption (Final payment % of Par) (R)	100.00	105.00	104.00	103.00	102.00	101.00
Frequency (payments per year) (F)	2	2	2	2	2	2
Call Provision		105.00	104.00	103.00	102.00	101.00
YTM=	8.249%	YTC=	NA	19.289%	11.006%	9.415%	8.757%
YTW=	8.249%	CY=	8.1218%				
Face Value	$1,000					
Coupon Payment $	$40					
Years (Term)	10 Years					

=YIELD(J9,J9,J11,J12,J13)
=YIELD(SD,MD,CR,MP,R,F)

INTERNAL RATE OR RETURN METHOD

# Pmts	Coupon Dates	YTM	YTC1	YTC2	YTC3	YTC4	YTC5
		(985.00)		(985.00)	(985.00)	(985.00)	(985.00)
1	1/16/2019	40.00		1,080.00	40.00	40.00	40.00
2	7/16/2019	40.00			40.00	40.00	40.00
3	1/16/2020	40.00			1,070.00	40.00	40.00
4	7/16/2020	40.00				40.00	40.00
5	1/16/2021	40.00				40.00	40.00
6	7/16/2021	40.00				1,060.00	40.00
7	1/16/2022	40.00					40.00
8	7/16/2022	40.00	=+$E$10/$E$13*$E$21+K12*10				1,050.00
9	1/16/2023	40.00					
10	7/16/2023	40.00	Payment $40				
11	1/16/2024	40.00	Redemption $1020				
12	7/16/2024	40.00					
13	1/16/2025	40.00					
14	7/16/2025	40.00					
15	1/16/2026	40.00					
16	7/16/2026	40.00					
17	1/16/2027	1,040.00					
IRR =		8.249%	N/A	19.289%	11.006%	9.177%	8.666%
		=IRR(E28:E45)*2			=IRR(I28:I45)*2		

Figure 11.6