Financial Accounting Recitation 3 (B Term)

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Nov 8, 2024

Road Map

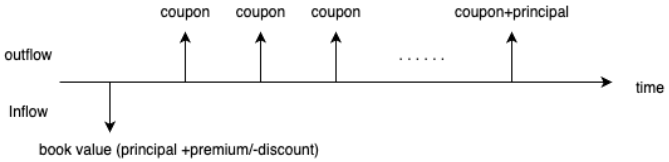
- Recap of PP&E
- Recap of Bond Accounting

PP&E

- Ending PP&E = Beginning PP&E + Purchase - Sale/Disposal (All in gross values)
- Ending Acc Dep = Beginning Acc Dep + Dep Exp - Acc Dep Related to Sale/Disposal
- Gain/Loss on Sale of PP&E = Proceeds - (Gross Value of PP&E - Related Acc Dep) (Gain if positive and loss if negative)
- Typical roadmap: 1) Use one equation to back out one unknown, x; 2) Use the intermediary result, x, to back out other unknowns in other equations

Introduction

- What are *bonds*?
  - You can think of *bonds* as a way for a company to raise funds
  - The companies *issue* (or sell) bonds to the public in exchange for cash



- *Coupon* payments (optional by the bond issuer)
  - You can think of coupon payments as periodic cash payments that the company will make
- At the bond's *maturity* date, the issuer pays back the *principal* (face value)
- The *market yield* is the interest rate that makes the present value and the price of the bond equal to each other

Pricing a Bond

- Two critical components: The coupon payments and the principal

Example

- Assume a company XYZ Ltd has issued a bond with a face value of $1000, carrying an annual coupon rate of 5% and maturing in 10 years. The market yield is 7%.

Component 1: The principal amount

- The bond has a face value of $1000. How much will it be worth today when it's repaid to the investor in 10 years?

$$PV(Principal) = \frac{1000}{(1+7\%)^{10}} = \$508$$

- We account for the TVOM because this accounts for the opportunity cost to the investor: If they didn't invest in this bond, they could've invested it at the market rate of 7%

Pricing a Bond (Cont'd)

Component 2: The coupon payments

- Each year, the investor receives a 5% coupon, which is $5\% \times 1000 = \$50$ in dollars

$$PV(Coupons) = 50 \times \frac{1 - (1 + 7\%)^{-10}}{7\%} = \$351$$

The price of the bond is the sum of the present value of the principal AND the coupons

$$P(Bond) = PV(Principal) + PV(Coupons) = \$860$$

Pricing a Bond (Cont'd)

- An example of pricing the bond with Excel

I	J	K
Coupon Rate	5%	
Face Value	1000	
Market Yield	7%	
Periods	10	
PV (Principal)	$508.35	=PV(0.07,10,0,-1000)
PV (Coupon)	$351.18	=PV(0.07,10,-50,0)
PV (Bond)	$859.53	=PV(0.07,10,-50,-1000)

Discounts and Premiums

- In this case, the bond is issued at a discount since the price is lower than the face value
- The relationship depends on the market yield and the coupon rate

ⓐ At a discount	Price $<$ Face value	Market yield $>$ Coupon rate
ⓑ At a premium	Price $>$ Face value	Market yield $<$ Coupon rate
ⓒ At par	Price $=$ Face value	Market yield $=$ Coupon rate

- ⓐ the company pays LESS than the market does (a discount is therefore offered)
- ⓑ the company pays MORE than the market does (a premium is therefore charged)
- ⓒ the company pays the SAME as the market does (a fair game)

Amortization and Discounts

- It is useful to think about amortization in this way: At the issuance of the bond, we have 10 future coupon payments, where the discount (or premium) will "unfold" for each interest payment
- Each year after the coupon payment, a portion of the total discount should be reduced because that has already been "incurred"
- After the discount for the first interest payment has happened, we should only now record the 9 remaining discounts that will still happen in the future
- The underlying logic is that we expense a portion of the discount on each coupon payment since the source of this discount comes from the fact that coupon rate $<$ market rate

Bond Amortization

Now, let's work on the journal entries...

- At Bond Issuance

Dr. Cash	860	
Dr. Bond Discount	140	
Cr. Bonds Payable		1000

- The first time we make a coupon payment and recognize interest expense for the year

Dr. Interest Expense	60 ($= 860 \times 7\%$)	
Cr. Bond Discount	10	
Cr. Cash		50

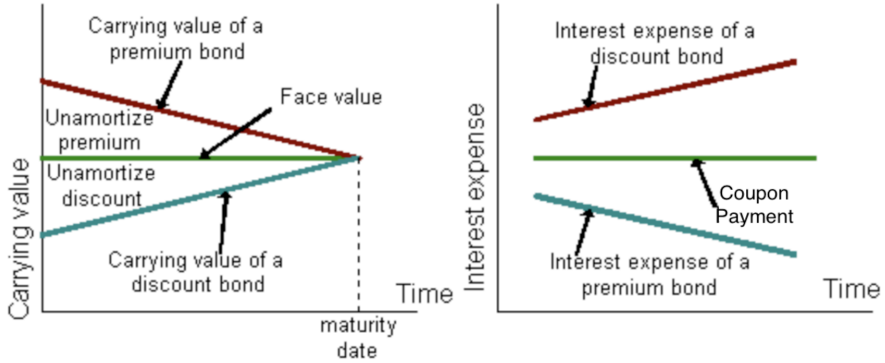
- Each time we pay the coupon, we are paying out our coupon rate, but we are incurring the interest expense equal to the market rate. We take a portion out of our Bond Discount account because we are paying below the market rate

Bond Amortization (Cont'd)

- The amortization process boils down to just recognizing portions of the total discount over the life of the bond until, eventually, we expense it all and Bond Discount $= 0$
- An example of amortizing the bond with Excel

	A	B	C	D	E	F	G
1	**Time**	**Interest Payment**	**Interest Expense**	**Amortization of Bond Discount**	**Bond Discount**	**Bonds Payable**	**Book Value**
2		Coupon Rate * Face Value	Market Yield * Previous Book Value	Interest Expense - Interest Payment	Bond Discount - Amortization		Bonds Payable - Bond Discount
3	0				$140.47	1000	$859.53
4	1	50	$60.17	$10.17	$130.30	1000	$869.70
5	2	50	$60.88	$10.88	$119.43	1000	$880.57
6	3	50	$61.64	$11.64	$107.79	1000	$892.21
7	4	50	$62.45	$12.45	$95.33	1000	$904.67
8	5	50	$63.33	$13.33	$82.00	1000	$918.00
9	6	50	$64.26	$14.26	$67.74	1000	$932.26
10	7	50	$65.26	$15.26	$52.49	1000	$947.51
11	8	50	$66.33	$16.33	$36.16	1000	$963.84
12	9	50	$67.47	$17.47	$18.69	1000	$981.31
13	10	50	$68.69	$18.69	($0.00)	1000	$1,000.00
14	Total	500	640.4716308	140.4716308			

Bond Amortization Graph



- This figure only illustrates the change over time; the change is typically not linear