Chapter 10

2022年4月7日 15:51

Reporting and Understanding Bond Securities

By Yunhao Cao, for UGBA 102A Spring 2022 by Prof. Gary Pieroni.

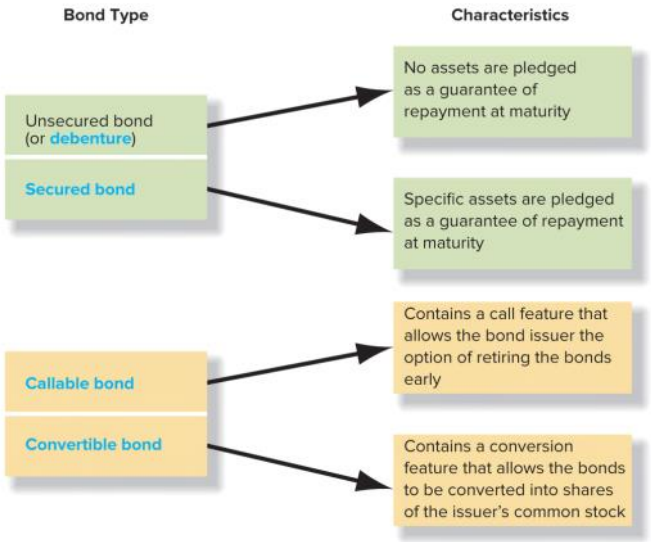
Why do companies issue bonds? Mainly because of the following reasons:

1. Stockholders remain control
2. A portion of the interest expense is tax deductible
3. Issuing bonds can increase the return to shareholders: if a company can borrow at low interest and invest in projects that earn a high rate of return it can increase the return to shareholders

Note: Coupon Rate is always stated in annual terms

Different types of bonds

1. Secured bond
    a. Specific assets are pledged as a guarantee of repayment at maturity.
2. Convertible bonds
    a. Low interest rate and unsecured bonds that may be converted to other securities of the issuer (usually common stock)



Bond Issuance Process

1. Prepare a bond indenture(债券契约) - a legal document that describes all the details of a debt security to potential buyers, and a bond prospectus(with the SEC) - a regulatory filing that describes all the details of a debt or equity security to potential buyers.

a. Details include maturity date, rate of interest to be paid, the date of each interest payment, and other characteristics such as callable or convertible
b. The prospectus also describes any covenants(契约) designed to protect bondholders.
    i. Because of the power of limit of covenants to the company, it also appears on the notes to the financial statements

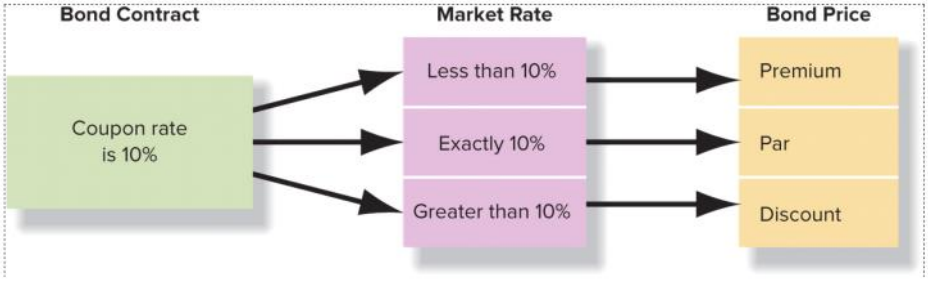
2. Issue bond certificate to investors
    a. All bond certificates for the same bond contain the same info.
        i. Maturity date, coupon rate, interest dates, etc.
3. Trustee - an independent third party, is usually appointed to represent the bondholders
    a. This party checks whether a company has fulfilled all provisions of the bond contrast.

Bond Rating Agencies

Standard & Poor's	Moody's	Fitch	Description	Risk
AAA	Aaa	AAA	Highest investment grade	Low risk
AA	Aa	AA		
A	A	A		
BBB	Baa	BBB	Lowest investment grade	
BB	Ba	BB	Highest junk bond grade	
B	B	B		
CCC	Caa	CCC		
CC	Ca	CC		
C	C	C		
D	C	DDD	In default or unrated	High risk

Many banks, mutual funds, and trusts are permitted to invest only in investment-grade bonds.

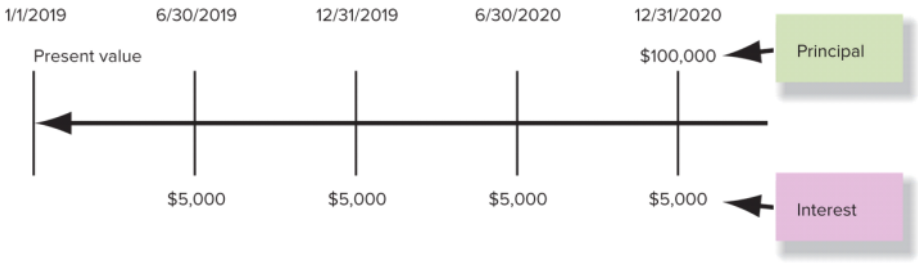
Market interest rate(yield / effective interest rate) - demanded rate of return for bonds by investors
Bond is issued at par / premium / discount if the coupon rate is equal, bigger, or smaller than market interest rate.



Important to note that regardless of whether a bond is issued at par, premium, or discount, the investors would always earn the market rate of return.

Issuer	Coupon (%)	Maturity	Current ($)	Yield (%)
Apple	3.45	2024	101.29	3.29
Amazon	2.50	2022	94.92	3.20
Walmart	3.30	2024	101.36	3.13

Present Value of a Bond



	Present Value
Single principal payment at maturity: $100,000 × 0.82270	$ 82,270
+ Annuity cash interest payment: $5,000 × 3.54595	17,730
Issue (sale) price of bonds	$100,000

Times Interest Earned

"Is a company generating sufficient resources from its profit-making activities to meet its current interest obligations?"

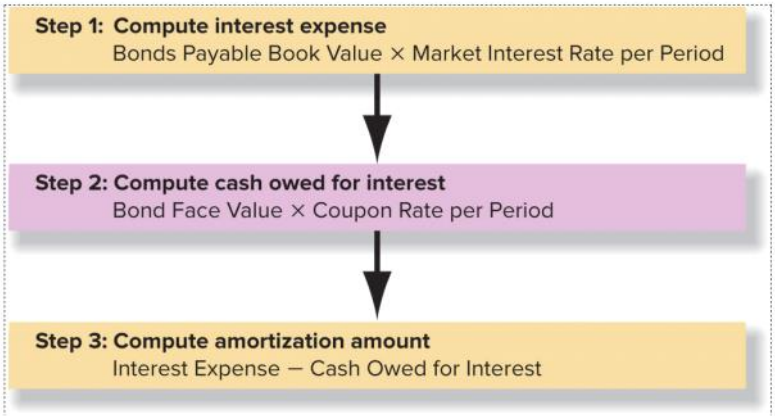
$$\text{Times Interest Earned} = \frac{Net\ Income + Interest\ Expense + Income\ Tax\ Expense}{Interest\ Expense}$$

Reporting Interest Expense on Bonds at a discount using Effective-Interest Amortization

Under this "Effective-interest amortization" method, a company computes interest expense in a given period by:

$$\text{Interest Expense} = \text{Bonds Payable Book Value} \times Market\ rate\ of\ interest\ on\ the\ date\ of\ issuance$$

When bonds are issued at a discount, using a market interest rate that is greater than the coupon rate results in interest expense each period being greater than the cash owed for interest each period. The difference between interest expense and the cash owed for interest is the amount of the bond discount amortized during the period.



WITH DISCOUNT ACCOUNT

	Debit	Credit
Cash (+A)	96,535	
Bond discount (-L)	3,465	
Bonds payable (+L)		100,000

Assets	=	Liabilities	+	Stockholders Equity
Cash +96,535		Bonds payable +100,000		
		Bond discount -3,465		

Bonds payable book value: **$96,535**

($100,000 − $3,465)

Step 1: **Interest expense:** $96,535 × (0.12 × ½ year) = **$5,792**
Step 2: **Cash owed for interest:** $100,000 × (0.10 × ½ year) = **$5,000**
Step 3: **Amortized amount:** $5,792 − $5,000 = **$792**

The journal entry Amazon would enter is:

	Debit	Credit
Interest expense (+E, −SE)	5,792	
Bond discount (+L)		792
Cash (−A)		5,000

Effective-interest amortization causes these amounts to change each period.

Assets	=	Liabilities	+	Stockholders' Equity
Cash −5,000		Bond discount +792		Interest expense (+E) −5,792

Bonds payable book value: **$97,327** ($100,000 − $3,465 + $792)

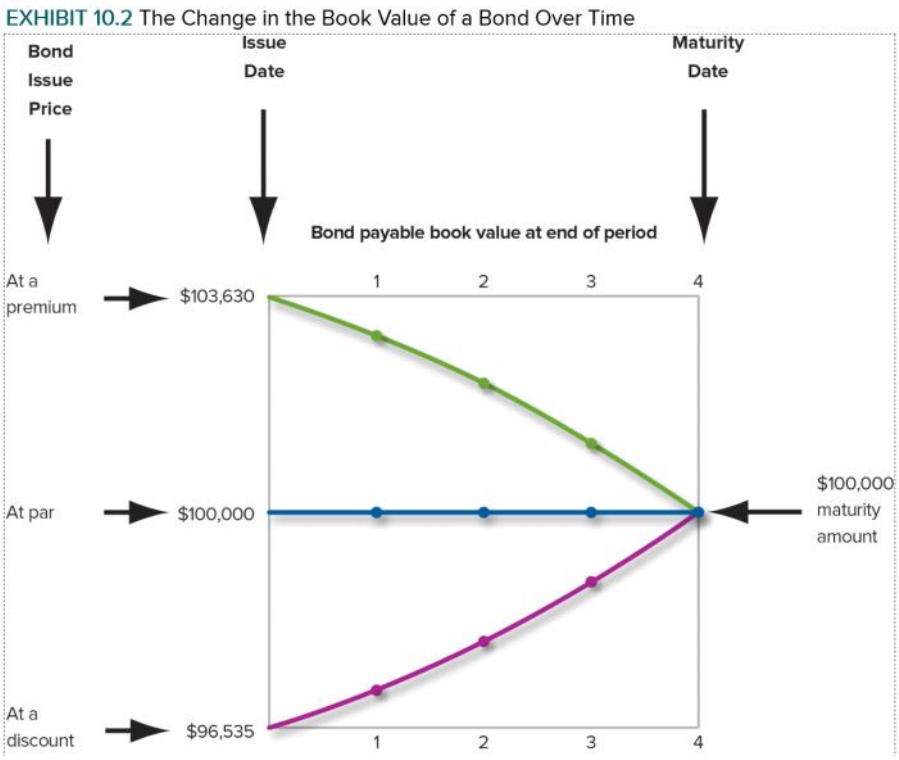
Bond at Premium

WITH PREMIUM ACCOUNT

	Debit	Credit
Cash (+A)	103,630	
Bond premium (+L)		3,630
Bonds payable (+L)		100,000

	Debit	Credit
Interest expense (+E, −SE)	4,145	
Bond premium (−L)	855	
Cash (−A)		5,000

Book Value of a Bond Over Time

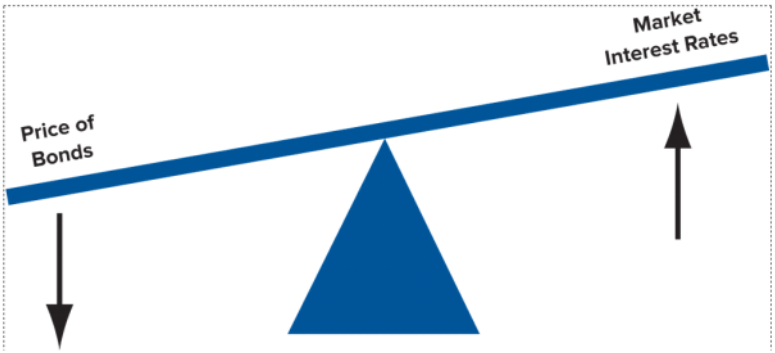


Debt-to-Equity Ratio

"What is the relationship between the capital provided by owners and the amount of capital provided by creditors?"

$\text{Debt} - \text{to} - \text{Equity} = \text{Total Liabilities} \div Total\ Stockholder's\ Equity$

Recalling Bonds



Note: Interest rate increases, bond price decreases

HW Notes:

```
def futureValue(capital,interest_rate,period):
    rate = interest_rate / 100.0
    rate += 1.
    return capital * (rate ** period)

def pastValue(capital,interest_rate,period):
    rate = 1 + interest_rate / 100.0
    return capital / (rate ** period)
```

```
def bondPresentValue(face_value,coupon_rate,periods_per_year,years,interest_rate):
    numPeriods = int(round(periods_per_year * years))
    couponPerPeriod = coupon_rate / 100.0 * face_value / periods_per_year
    interestPerPeriod = interest_rate / periods_per_year
    totalPresentValue = 0.
    for cPeriod in range(1,numPeriods+1):
            totalPresentValue += pastValue(couponPerPeriod,interestPerPeriod,cPeriod)
    totalPresentValue += pastValue(face_value,interestPerPeriod,numPeriods)
    return totalPresentValue
```

Required:
1. Complete the amortization schedule. **(Enter all your values in positive. Ro**

Date	Cash	Interest	Amortization	Balance
January 1, Year 1				$ 58,998
End of Year 1	$ 3,944	$ 3,717	$ 227	$ 58,771
End of Year 2	$ 3,944	$ 3,703	$ 241	$ 58,530
End of Year 3	$ 3,944	$ 3,687	$ 257	$ 58,273
End of Year 4	$ 3,944	$ 3,671	$ 273	$ 58,000

Amortization Schedule, Cash is the scheduled coupon payment, interest is the market interest.
Cash - interest = amortization
Balance prev year - balance present year = amortization present year
The ending balance should be the face value.

Several years ago, Cyclop Company issued bonds with a face value of $1,000,000 for $1,055,000. As a result of declining interest rates, the company has decided to call the bonds at a call premium of 5 percent over par. The bonds have a current book value of $1,020,000. **(If no entry is required for a transaction/event, select "No journal entry required" in the first account field.)**

Required:
Record the retirement of the bonds, using a premium account.

Answer is complete and correct.

No	Transaction	General Journal	Debit	Credit
1	1	Bonds payable	1,000,000	
		Bond premium	20,000	
		Loss on bond call	30,000	
		Cash		1,050,000