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## Module 14

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## Module 14 Summary

### I. Financing Sources

- A. Before we examine bonds and bond entries, we need to understand why bonds are issued. We'll get to bonds and bond transactions a little later, and you should not skip over this introductory material. It will provide background that you'll need in order to understand the entries that are made to account for bond issuances.

Companies require *financing* (also called *funding*) in order to survive. This just means that they must be able to obtain cash when they do not have enough on hand to meet their needs.

- a. Cash is a wonderfully useful asset, since it can be spent in so many ways. It can be used to pay ongoing business expenses, make interest and dividend payments, retire liabilities, buy new equipment, buildings, and on and on.
- b. If the company happens to run out of cash and cannot acquire any more, bad things happen. The same bad things happen to you, too, when your cash dries up:
- When your expenses can't be paid on time, your water, electricity and phone services are eventually cut off.
  - When you miss too many rent payments, you lose your apartment.
  - When you miss too many car payments, you lose your car.
  - Since you're living on the street without a car, you can't get to work and you lose your job.
  - When you can't pay your tuition, your school drops you like an over-baked potato from a 1,500 watt microwave oven.

You now have no place to live and no way to get to a new job even if you're lucky enough to find one. You also have no future, since you've lost the opportunity to finish that degree program in Accounting (which could have gotten you into the fabled Dream Job with a major corporation). You can't survive without cash and neither can a company!

- c. We should note, though, that *needing* cash is not a negative thing. Very few of us have enough cash to buy a new house outright, and

taking out a mortgage to buy one is not a sign of impending calamity. Likewise, taking out a student loan to finish medical school (or that Accounting degree) can lead to future benefits that will dwarf the financing costs that are incurred. Companies also often have great investment opportunities available to them, and they often cost a lot more than the company presently has in its checking account.

- d. Our conclusion? Needing money is not always a sign of financial weakness. It can be a sign of future success, too. But running out of cash when there is no way to raise more – now that’s a train wreck!
- B. There are only **three sources of financing** that companies may utilize in order to acquire more cash:
1. **Equity financing.** New issuances of common or preferred stock allow a corporation to raise new capital from stock investors. In partnerships and sole proprietorships, the owner(s) must come up with the additional funds themselves, or allow new partners to join them in their businesses. In all these cases, *the financing is being provided by the owners of the business.*
  2. **Debt financing.** Borrowing from creditors, either short-term or long-term, is another way the company can raise cash. In this case, *the financing is being provided new or existing creditors.*
  3. Both equity and debt financing represent **external sources** of financing, since cash is raised from parties outside the company. However, **internal financing** is also available.
    - a. *Internal financing* is provided “automatically” through profitable *operations*. After all, when more cash is collected from the customers than is spent to operate the business, the company’s cash balance grows. Business profits belong to the owner(s) of the business, but it is common for some or even all of the profits to be *retained* in the business and used as a source of financing. When this is done, the balances in the *Cash* account and the *Retained Earnings* account (or the *Capital* accounts in partnerships and sole proprietorships) grow.
    - b. How a corporation’s stockholders react to the retention of earnings depends upon their perceptions regarding the company’s growth rate. If the corporation has many profitable opportunities available to it (its stock is thought to

be a “growth stock”), then most investors will actually prefer to have the business keep and reinvest the profits. After all, the company will be able to invest this cash more profitably than the stockholders can, and they know that they will benefit through higher stock prices as business profits grow.

- C. Since internal financing sources are limited in size, the corporation tends to rely upon either *debt financing* or *equity financing* when large amounts of cash are needed.

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**II. Choosing a Source of Financing.** When funds must be raised from external sources, the company will have to choose between equity and debt financing. This decision requires careful consideration of the advantages and disadvantages associated with each option.

A. ***Advantages of equity financing:***

1. ***No Risk of Default.*** Dividend payments to the stockholders are not legal obligations, but interest payments to creditors are.
  - a. This means that if cash is tight in the future, dividends do not *have* to be paid. The Board of Directors can choose to “pass” the dividend, and if they do the *stockholders are not able to sue* the corporation to force its payment.
  - b. Interest on loans must be paid. Failure to pay interest when it is due (called *defaulting*) will probably cause the creditors to take legal action against the company. This may well result in bankruptcy. Even if the company does eventually pay its creditors, the fact that the company defaulted on its interest payment is a serious blow to the company’s reputation.
2. ***No Maturity Date.*** Stocks never come due, but debts do. They must be repaid on a specified date (the *maturity date*, or *due date*), and this repayment of principal is also a legal obligation. Again, inability to make the payment can lead to bankruptcy.

- B. ***Advantages of debt financing.*** As we saw above, debt financing increases the company’s risk level. Debt financing, though, also provides the company with many advantages.

1. *Retention of ownership control.* Since no new shares of stock are issued, there is no possibility that a majority shareholder might lose control of the corporation.
2. *Tax savings.* Interest expense on debt is tax-deductible, but dividend distributions to stockholders are not. Since interest expense can be subtracted from revenues to determine taxable income, there will be less taxable income and less tax expense when debt financing is used. Therefore, interest payments generate tax savings while dividend payments do not, making it "cheaper" to pay interest to creditors than it is to pay dividends to stockholders.

*Here's What We Mean...*

*Suppose a company makes a \$1,000 investment, realizing a cash return of \$100 from the investment at the end of the year. The tax rate is 30%.*

*If the company does not borrow the \$1,000, raising it instead from internal financing sources or owner contributions, all \$100 would be taxable income. The company would then have to pay \$30 in taxes ( $\$100 \times 30\%$ ).*

*However, if the company borrows the money, financing the investment through a bank loan at 5% per year, \$50 of interest expense will be incurred ( $\$1,000 \times 5\%$ ). Interest is a deductible expense, so the company's taxable income falls to \$50 ( $\$100$  in gross profit -  $\$50$  in interest expense). The tax expense is now only \$15 ( $\$50 \times 30\%$ ).*

*Our conclusion? The \$50 of interest expense generated a \$15 tax savings, making debt financing the lower cost financing alternative. Net of tax savings, the interest cost to the company is just \$35. This works out to an after-tax interest rate of only 3.5% ( $\$35$  after-tax interest cost /  $\$1,000$  borrowed).*

*Note the following: If equity financing had been used, and if the stockholders were happy with a 5% dividend rate of return, the company would have had to pay \$50 in dividends to them. There would be no deduction and no tax savings, so the after-tax cost to the company would be \$50 instead of \$35. However, stocks are risky investments, and the stockholders probably won't be happy earning just 5%. They will probably demand more, making the cost of the equity financing choice even higher!*

3. *Financial leverage.* Use of debt allows the firm to take advantage of an effect called **financial leverage**.
  - a. This "leverage" effect occurs any time the firm is able to earn more from its investment of borrowed money than it has to pay to the lender for the use of the money. *(This is one of those sentences that you'll have to read more than once, and s-l-o-w-l-y. It will make more sense after you read through the example below :).*

- b. If you paid attention during your science class, you know that a lever allows a person to move an awfully big rock with just a small amount of force. Leverage creates a big effect from a little action. Financial leverage works in the same way. When more is earned than has to be paid to the creditors, the excess earnings over and above the interest cost spills over to stockholders. These additional profits magnify (or "leverage") the stockholders' earnings, allowing them to earn a lot from just a small amount of profit. This is illustrated below.

*Bear With Me, Now... We are about to spend a page or two discussing the concept of financial leverage. I know, I know. It doesn't seem like we're ever going to discuss bond transactions and entries, but leverage is an important concept. It will help you understand a fundamental difference between debt financing and equity financing, and that will be very beneficial for you as you continue your education in business administration. I'm sure you'll take advantage of it. An Accounting Masochist never turns down an opportunity to have a good time when the opportunity comes along!*

*Here's an Example!* Suppose you have an investment opportunity that will provide you with a 10% rate of return over one year. You have \$1,000 of your own money that you can invest. If you make the investment, you will "put in" \$1,000, you will earn \$100 ( $\$1,000 \times 10\% = \$100$ ), and you will "take out" \$1,100 at the end of the year. Therefore, you will be \$100 ahead, and you will have earned a 10% rate of return on your investment ( $\$100/\$1,000 = 10\%$ ).

But now suppose you decide to **leverage** your investment. You borrow \$1,000 from the bank at a 5% interest rate for one year, agreeing to repay the \$1,000 principal along with \$50 in interest at the end of the year. You now have \$1,000 of your money and \$1,000 of the bank's money to invest at the 10% rate of return.

- You invest the \$2,000 in the 10% investment, and you receive \$2,200 at the end of the year. You have earned a \$200 ( $\$2,000 \times 10\% = \$200$ ) from the investment.
- You give the bank its \$1,000 back, along with \$50 in interest. The bank has now recovered its principal and earned 5% in interest. The bank is happy.
- You are left with \$1,150 ( $\$2,200 - 1,050$ ). This is composed of your \$1,000 initial investment plus \$150 in profit. You are even happier, and this is why:
- Since you only invested \$1,000, the rate of return you have earned on your investment is 15% ( $\$150/\$1,000 = 15\%$ ).

How did you earn a 15% rate of return from an investment opportunity that only paid 10%? You "leveraged" your rate of return from the investment by using debt financing. Let's see exactly how this happened:

- (1) Every dollar of the \$2,000 that you invested earned just 10% (a total of \$200).
- (2) Your \$1,000 was invested at 10% and earned \$100.
- (3) The bank's 1,000 was invested at 10% and also earned \$100.
- (4) But you only have to pay the bank \$50 for the use of its money. Therefore...
- (5) ...the remaining \$50 of the \$100 that was earned from the investment of the bank's money belongs to you. When you add it to the \$100 that was earned from your \$1,000

investment, your total return rises to \$150. Thus, you were able to earn 15% ( $\$150/\$1,000 = 15\%$ ) from an investment that provided only a 10% rate of return!

Our conclusion? *Leverage works in your favor any time you are able to borrow money at a given interest rate, and then invest it to earn a higher rate of return.* Leverage is a direct result of using something that is highly valued in finance, namely *OPM*. *OPM*? It stands for “other people’s money.”

*But don’t fill out that loan application just yet!* We need to note that leverage can work in reverse as well. Suppose your investment doesn’t work out as planned, and you only earn 1% on the \$2,000 investment. You would now have just \$2,020 at the end of the year, and after you pay the bank its required \$1,050 you will only have \$970 of your original investment left. That means you lost \$30 of your \$1,000 investment. You have managed to lose 3% on an investment that paid a 1% rate of return!

This is the dark side of leverage. If the rate of return is less than the interest rate on the bank loan, you will have to make up the difference out of your own pocket!

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### III. Leverage and Earnings Per Common Share

- A. *Earnings per share (EPS)* is a standard profitability measure that is very relevant to stock investors when making investment decisions.
- B. In simplified form, *EPS* is calculated by dividing the corporation’s net income (earnings) by the number of shares of common stock that are outstanding. The result is the amount that was earned and that could potentially be paid out as a dividend to each share of the corporation’s stock.
  1. Investors are used to thinking of the stock’s *price* on a per-share basis, and knowing what the *net income* is on a per-share basis allows them to better evaluate the company’s profitability.
  2. For example, if all other things are equal, paying a price of \$10 per share for stock in a company that has earned only a penny per share would certainly be an unwise investment, compared to paying \$10 per share for stock in a similar company that has earned a dollar per share!
- C. Steps required to calculate EPS :
  - Since preferred stock dividends must be paid out of earnings before anything can be distributed to the common stockholders, it is necessary to first subtract preferred stock dividends (if there are any) from net income. This will give us the amount of the earnings that would be available for dividend payments to common shareholders.

- Divide this amount by the number of outstanding common stock shares to determine the *EPS*:

$$\text{Earnings Per Common Share} = \frac{\text{Net Income} - \text{Preferred Stock Dividends}}{\text{Number of Shares Outstanding}}$$

### **Leverage and EPS – An Example.**

The effect of *leverage* can be illustrated by computing the *earnings per share* for a hypothetical corporation. Suppose the corporation presently has 10,000 shares of common stock outstanding, and has net income of \$20,000. This means that the earnings per common share are \$2 (\$20,000 / 10,000 shares).

Now suppose the company wants to raise \$100,000 for a new store in another town. The new store will generate \$20,000 in additional net income per year, raising the amount of total net income to \$40,000.

The company can finance the store by issuing 10,000 shares of new common stock, bringing the number of total outstanding shares to 20,000, or it can issue \$100,000 of debt at a 10% interest rate, leaving the number of outstanding shares at 10,000. Which alternative has the more favorable impact on the earnings per share?

Let's examine the stock issuance alternative first. If new shares are issued to finance the investment, the EPS will be \$2 after the investment is made:

$$\text{EPS}_{\text{issue new stock}} = \frac{\$40,000 \text{ Net Income}}{20,000 \text{ Shares Outstanding}} = \$2$$

The EPS does not change if new shares are issued, so, ignoring other factors, the market price of the company's stock will not change as a result of the expansion.

If the new store is financed through a debt issuance, the net income will be reduced by the amount of interest expense paid on the debt (\$100,000 x 10% = \$10,000), leaving \$30,000 (\$40,000 - \$10,000 interest expense) in net income after interest. However, the number of shares remains at 10,000, so the EPS rises to \$3:

$$\text{EPS}_{\text{issue bonds}} = \frac{\$30,000 \text{ Net Income}}{10,000 \text{ Shares Outstanding}} = \$3$$

Ignoring other factors that might influence investors, the market price of the company's stock will now increase as a result of the expansion.



How did this happen? The company was able to borrow \$100,000, paying \$10,000 in interest per year. This money was invested, and the investment returned \$20,000 per year. After paying \$10,000 of this profit to the creditors in interest, \$10,000 was left to give the stockholders as additional profit. This additional return caused the increase in the earnings per share.

Remember, though, that leverage can also work in “reverse.” Had the new store produced a \$20,000 *loss* instead of a profit, the interest expense would still be incurred and the company would now have an overall loss of \$10,000 (\$20,000 in profit from the old store - \$20,000 loss on the new store - \$10,000 of interest expense). EPS would now be a negative amount, \$-1 per share (\$-10,000 net loss / 10,000 shares). Had the debt not been issued, the EPS would be \$0 per share (\$20,000 original profit - \$20,000 loss = \$0 profit), and no loss would have been incurred. Again we encounter the dark side of financial leverage!

- D. ***Financial Leverage Summary.*** As long as borrowed money can be invested to earn a return that is higher than the interest that must be paid, leverage works in the borrower’s favor. If less is earned than the interest that must be paid, the borrower must make up the difference. Because leverage magnifies both profits and losses, *using leverage increases the company’s degree of risk.*

#### IV. Nature & Characteristics of Bonds Payable

- A. ***Bonds*** are merely debts, similar to bank notes, with one notable difference. Rather than borrowing the funds directly from a single lender, *bonds* are issued to and held by the public.
- B. Why not just borrow the money from a single lender? The amount that the corporation needs to borrow may be too large for a single lender to accommodate, or it may be that the interest rate will be lower on a bond issue than it would be on a “direct placement” of the debt.
1. Bonds are issued through a syndicate of brokerage companies. These companies “place” the bonds with the final investor. This process occurs in the same way as a stock issuance, and it is costly. Legal fees and registration costs are incurred, and the bonds have to be issued at a discounted price to the members of the syndicate.
  2. Just as stock certificates are actively traded by stockholders in the stock market, ***bondholders*** are free to buy and sell bond certificates among themselves in the ***bond market***. Trading in the bond market is much less active than it is in the stock market.

Trading volumes (the number of securities purchased and sold each day) are much smaller, and price movements are usually not very dramatic.

- B. We must remember that a bond is a debt issue, and that the bondholder is a creditor. Therefore, bondholders can sue the corporation if interest and principal are not paid on time. Stockholders have no ability to sue the corporation for the payment of dividends or for the return of their capital.
- C. Because interest and principal are legal obligations, a *maturity date* and an *interest rate* are stipulated for the bond. The corporation promises to pay the *principal* at maturity (usually \$1,000 per bond) and to pay interest at specified times through the life of the bond issue (usually every six months).
- D. Several **terms** pertain to bond issuances, and every businessman should be familiar with them:
  - 1. **Bond Indenture** or **Trust Indenture** – This is just the *contract* between the corporation and the bondholders. All of the provisions of the bond issue are set out in this document.
  - 2. **Secured Bonds** – If specific assets have been pledged as **collateral** to the bond issue, the bonds are said to be *secured* (or *collateralized*). This means that if the corporation “goes under” and is forced to liquidate its assets, the proceeds from the sale of the assets that are pledged as collateral go first to repay the secured bondholders. If anything is left over after these bondholders are paid, it is then distributed to the general creditors. Collateral protects bondholders by reducing the likelihood of losses in the event of a corporate bankruptcy.
  - 3. **Debenture Bonds** – Unsecured bonds that have no collateral are sometimes called *debentures*. These are really just bonds that are given a different name. In practice, the term “bond” may be used with both secured and unsecured issuances, but a *debenture* will never be secured. Therefore, when we hear the term “debenture” we will know that there is no collateral, but just because the term “bond” is used doesn’t mean that there *is* collateral. Be sure to read the fine print!
  - 4. **Term Bond** – A “normal” bond issue having one maturity date. All the individual bonds in the bond issue have the same term and mature at the same time.

5. **Serial Bond** – A bond issue containing staggered maturity dates. A portion of the total bond issue matures on these dates throughout the life of the bond issue. This kind of bond issue may be viewed as less risky by the bondholders, since the corporation does not have to come up with the cash to retire all the bonds all at once.
6. **Convertible Bonds** – A bond that may be converted into common stock at discretion of the bondholder (like convertible preferred stock).
7. **Callable Bonds** – A bond that may be “called in” by the corporation before the maturity date (like callable preferred stock) and retired. Callable bonds have a *call price* that the corporation must pay to the bondholders if the bonds are *called*.
8. **Zero Coupon Bonds** -- A bond that carries no interest rate and makes no interest payments over its life. These bonds are sold at a discount to their maturity values. Investors buy them at the discounted price, and then collect their full maturity values when the bonds mature. The interest that the bondholder receives from a zero-coupon bond is equal to the difference between the discounted purchase price and the bond’s final maturity value.
9. **Sinking Fund** – A fund established by the issuer to accumulate the cash that can be used to retire a bond issue when it comes due. The issuer is usually required to make periodic payments into the fund during the life of the bond issue, and the money in the fund is put into low-risk investments. The goal is to pay enough into the fund over the life of the bond issue so that its accumulated value is sufficient to retire the bond issue when it matures.

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#### IV. Accounting for Bond Issuances

- A. We must introduce a few additional terms in order to understand the accounting entries that are made with bond issues:
  1. **Par Value (or Face Value)**. Often set at \$1,000 per bond, par value represents the *principal amount* of the loan. This is the amount that must be paid to the bondholders when the bonds mature.

- a. When bonds are issued, *Cash* is debited and a liability account, *Bonds Payable*, is credited. "*Bonds Payable*" is always credited for the par value of the bond issue.
- b. For example, suppose 100 bonds are issued for par value. If the par value is \$1,000 per bond, the entry to record the issuance is:

<b>Cash</b>	<b>100,000</b>	
<b>Bonds Payable</b> (100 x \$1,000)		<b>100,000</b>

2. **Contract Interest Rate** (also called the *face rate*, *coupon rate*, or *stated rate*). This is the annual rate of interest that the bond pays, based upon its par value.
  - a. For example, suppose that the bonds described above carry a 10% contract rate. A \$1,000 par value bond with a 10% contract rate pays \$100 in interest annually ( $\$1,000 \times 10\% = \$100$ ). Since interest is usually paid every six months, this works out to 5% every six month, or \$50 of *semi-annual* interest payments through the bond's life. ("Semi" just means "half," so semi-annual payments occur every half year.)

The entry that would be made to record each interest payment for the issue of 100 bonds would be:

<b>Interest Expense</b> (100 x \$50)	<b>5,000</b>	
<b>Cash</b>		<b>5,000</b>

- b. After all the interest payments have been made though the life of the bond issue, the bonds mature. It is now time to pay the bondholders the par value of the bond issue. The entry to record the retirement of the bonds at maturity is:

<b>Bonds Payable</b> (100 x \$1,000)	<b>100,000</b>	
<b>Cash</b>		<b>100,000</b>

- c. **Terminology.** The *contract interest rate* is also called the *face rate*, *coupon rate*, or *stated rate*). Why are there so many names for the contract rate? They just arise from common usage over time. In this case, the interest rate is specified in the bond indenture, which is the *contract* between the corporation and the bondholders. It is also

printed (or, in other words, *stated*) on the *face* of the bond certificate. And, in the old days, interest *coupons* were attached to the bond certificates, one for each interest payment that would be made over the life of the bond issue. Bondholders would “clip the coupons,” fill them out, and mail them to the corporation in order to obtain their “coupon interest payments.”

- d. The *contract interest rate* is not to be confused with the ***market rate of interest*** (see below). Both are important in accounting for bond issues, and you must understand the differences between them.
- Just remember, *the **contract interest rate** merely determines the amount of interest that will be paid on each interest payment date. It is stated in the bond indenture.*
  - *The **market rate of interest** is the rate of return that an investor who purchases the bond will actually earn from the investment. The market rate of return determines the price investors will be willing to pay for the bond at any given moment in the bond market.*

### ***Let's Avoid Confusion!***

Students often struggle with bond entries simply because they mix up the *contract rate* with the *market rate*. Let me give you the rules of the road regarding bond issues and the contract rate:

You'll use the contract rate to calculate the amount of interest that the company must pay every 6 months throughout the life of the bond issue. (This is the amount that will be credited to *Cash* in each of the entries that you'll make to record the payment of interest.)

*Over with! Done!* The contract rate won't be used for anything else.

- B. A bond's ***market interest rate*** is also called the *effective rate*, *required rate*, or *yield to maturity*. It is the “going rate of interest,” the rate of return that the bond, and all other bonds with the same degree of risk, must provide in order to attract buyers.
1. The market interest rate is determined by (1) economic conditions (they establish the general level of interest rates) and (2) by the individual bond's degree of risk (which is affected by things such as collateral, the bond's term, the issuing company's credit rating, the existence of a sinking fund, etc.). Since both economic conditions and the bond's perceived risks are subject to change every second of

every day, a bond's market interest rate changes (by small amounts) throughout the trading day.

- Investors will not purchase a given bond unless it provides them with the market rate of return; that is, the rate of return that is appropriate for the bond's degree of risk. Therefore, in a competitive market, all bonds within a given risk classification will be priced to provide investors with the same rate of return. Since the market rate changes by small degrees throughout the trading day, the bond's price will also vary slightly from trade to trade.

### ***Avoiding Even More Confusion!***

Here are the rules of the road regarding the market rate:

The market interest rate is not set by the company and it is not printed in the bond indenture. It is market-determined. You will use it to calculate the market price of the bond. You'll also use it to determine the amount of interest expense to report when interest is paid, but only if you are using the "effective interest method" to account for the interest payments from a bond issue. More on these things later.

*Over with! Done!*

### ***Here's an Example...***

*Suppose you have \$1,000 to invest, and there are three investment opportunities available to you. One of the investments you are considering is an offer from Risky Business, Inc., which promises to pay you a fixed return of \$1,100 in one year if you agree to invest \$1,000 today (resulting in a 10% rate of return).*

*Another investment has also interested you. Risk Is Us, Inc. has promised to pay you \$1,120 in one year if you will invest \$1,000 today (a 12% rate of return).*

*Both opportunities are risky, so you may not get all of the promised return. You may not even get all of your \$1,000 back. If you want to play it safe, you can always keep your \$1,000 in the bank, where you will earn a guaranteed 1% return. If you choose this option, you will accumulate \$1,010 in one year.*

*Why are these rates of return different? Investors, being rational individuals, do not like to lose money. Therefore, they will always choose a less risky investment over a more risky one -- unless they are "paid" for taking more risk. That is, they will not make a risky investment unless the rate of return they can earn from the risky investment is greater than the rate of return they can earn on a safer investment. As the risk of a loss rises, so does the investor's required rate of return.*

*Our two corporation investments are riskier than a bank deposit, and so they have been "priced" to give you a much higher rate of return. Is it high enough to persuade*

*you to take the risks and make one of the riskier investments? The answer to that question depends on your own personal degree of risk tolerance. If you do decide that the additional returns are worth the greater risks, then you have to choose between the 10% and the 12% investments.*

*Let's say that after doing an intensive analysis, you decide that the two investments have the same degree of risk. You also determine that every other investment opportunity with this same degree of risk provides investors with a 12% rate of return. There are no investments in this risk classification that provide higher returns, and none that provide less – except for Risky Business.*

*The market rate for this risk level is clearly 12%, and since the Risky Business investment only provides 10%, you will reject it. So will every other investor. Risky Business will not be able to find a buyer for its investment opportunity unless it increases the investment's rate of return from 10% to the 12% that investors can get from every other investment opportunity that has the same degree of risk.*

*There are only two ways that an investment's rate of return can be increased: (1) by raising the investment's payout, or (2) by reducing the offering price. In this case, the payout is fixed at \$1,100, so only the price can be adjusted. It must fall, but by how much? What is a fair price for the investment?*

*The answer is \$982. At that price, an investor who pays \$982, and "makes" \$118 when the \$1,100 payout is collected, will earn a rate of return of exactly 12% ( $\$118/\$982=12\%$ ). At this price, the Risky Business investment is fairly priced, and Risky Business will be able to find buyers for its investment opportunity. The market will have worked its magic, "pricing" the investment to provide investors with the market rate of return that is required for its risk level.*

*The two investments, Risky Business at \$982 and Risk Is Us at \$1,000, are now fairly priced. If their risk levels change, or if the general level of interest rates in the economy changes, then the market rate of return will no longer be 12%. When it changes, as it does every moment of every day (by tiny amounts), market forces will adjust the prices of these investment opportunities, and they will up or down accordingly (by small amounts).*

## **B. Bond Prices and the Market Interest Rate**

1. The two risky investment opportunities in the example above had single, fixed payouts. Bonds are also "fixed income investments," though they have more than just one future payment. The future returns (interest payments and principal) are fixed amounts that will not change.

- a. Remember, interest payments are based on the par value of the bond, and the par value is the principal amount that is repaid to the bondholder when the bond matures. For example, the \$1,000 par value bond used in our earlier illustration, with its 10% contract rate, provides the bondholder with two \$50 interest payments (a total of \$100) each year. The bondholder then receives the par value, \$1,000, at maturity. *The \$100 of annual interest payments and the \$1,000 maturity value are fixed payments – they cannot change.*
  - b. As explained in the example above, market forces will cause the price of a fixed income investment to change from day to day. Therefore, when the company issues its bonds, it will probably not receive exactly par value for them. Even after they have been issued and they begin to be traded in the bond market, their prices will change every day. At any moment in time, *the bond's price will be determined by the constantly-changing market rate of return.*
2. Let's examine the bond investment from the point of view of the investor, in order to understand how the market rate of return determines the price the investor will pay:
    - a. *Price equals par value.* If an investor pays exactly \$1,000 (par value) for the bond with the 10% contract rate described above, then the investor will receive two \$50 interest payments each year. This adds up to a total of \$100 per year throughout the life of the bond issue. Receiving \$100 per year on a \$1,000 investment results in a 10% rate of return on the investment ( $\$100/\$1,000 = 10\%$ ). When the bond matures, the investor is paid the \$1,000 par value amount. This is exactly the amount invested, so there is no additional gain or loss and the investor will have earned a 10% annual rate of return on the bond investment. Our conclusion? *When the market rate and the contract rate are equal, the bonds can be sold for par value.*
    - b. *Price is less than par value.* If the investor pays less than par value for the bond investment (let's say \$800), then the investor will still receive that fixed \$100 interest payment each year throughout the life of the bond issue. Earning \$100 per year on an \$800 investment results in a 12.5% rate of return ( $\$100/\$800 = 12.5\%$ ). Then, when the bond matures,



the bondholder is paid the \$1,000 par value amount. This is \$200 more than the amount that was originally invested, so there is an additional return of \$200 at maturity. This increases the investor's actual annual rate of return to something that is even greater than 12.5%. *When the market rate of return is greater than the contract rate, the bonds will sell for less than par value.*

- c. *Price is greater than par value.* If the investor pays more than par value for the bond investment (let's say \$1,200), then the investor will still receive the fixed \$100 interest payment each year throughout the life of the bond issue. Earning \$100 per year on a \$1,200 investment results in an 8.3% rate of return on the investment ( $\$100/\$1,200 = 8.3\%$ ). Then, when the bond matures, the investor is paid the \$1,000 par value amount. This is \$200 less than the amount that was originally invested, so there is a loss of \$200 at maturity. This decreases the investor's actual annual rate of return to something that is even less than 8.3%. *When the market rate of return is less than the contract rate, the bonds will sell for more than par value.*
- d. At any particular point in time, the market interest rate may be greater than, less than, or equal to the contract rate. When it is, the bonds will be valued at a price that is less than, greater than, or equal to par value:

When the Market Rate is:	The Bond Price is:
<i>Equal to the contract rate</i>	<i>Equal to par</i>
<i>Greater than the contract rate</i>	<i>Less than par</i>
<i>Less than the contract rate</i>	<i>Greater than par</i>

B. **Premium** and **Discount**. As we just learned, the company will probably not receive exactly par value when it issues its bonds. If more than par value is received upon issuance, the excess is referred to as the **premium**. If less than par value is received, the difference is a **discount**.

1. Bonds sell at a *premium* when the market rate is less than the contract rate. This means that the company is effectively paying the bondholders a rate of interest that is less than the contract rate.
2. Bonds sell at a *discount* when the market rate is greater than the contract rate. This means that the company is effectively paying the bondholders an interest rate that is greater than the contract rate.

3. Bonds will sell at *par* only if the market rate is equal to the contract rate. In this case, the company pays the bondholders an interest rate that is equal to the contract rate.

C. **Journal entries** (through the term of the bond issue)

1. When bonds are issued, Cash must be debited for the amount received and Bonds Payable credited for the par value (equal to the maturity amount, the true future obligation). A debit difference represents a discount, a credit difference represents a premium:

<b><u>Discount:</u></b>		<b><u>Premium:</u></b>	
Cash	\$X	Cash	\$X
Discount on Bonds Payable	\$X	Premium on Bonds Payable	\$X
Bonds Payable	\$X	Bonds Payable	\$X

2. **Balance sheet presentation:** The *Bonds Payable* account is listed under long-term liabilities on the balance sheet. *Discounts* are contra-accounts to Bonds Payable (subtracted from *Bonds Payable*) and *premiums* are adjunct accounts to Bonds Payable (added to *Bonds Payable*). The bond's **carrying value** is the *Bonds Payable* balance plus the premium or minus the discount account balance:

<b><u>Long-term Liabilities:</u></b>		<b><u>Long-term Liabilities:</u></b>	
Bonds Payable	\$X	Bonds Payable	\$X
Less: Discount	<u>-X</u> \$X	Add: Premium	<u>+X</u> \$X

3. **Amortizing Discounts and Premiums.** Since the face amount must be paid at maturity even though less than this amount was received by the company when the bonds were issued, a *discount* represents an additional interest payment that the company must make to the bondholders on the maturity date of the bond. Likewise, a *premium* represents a reduction in the amount of interest expense incurred by the company over the bond's life. Following the matching principle, this additional expense or this reduction in the expense must be recorded period by period through the life of the bond issue. This is done by **amortizing** the bond discount or premium.
4. When interest is paid, *Interest Expense* must be debited and *Cash* credited. The amount of interest to be paid *each year* equals the face rate times the face value. Interest on bonds is normally paid

twice each year (*semi-annually*), so this annual interest amount must be divided by two. The *Interest Expense* debit equals this amount plus the amortization of the discount (or minus the amortization of the premium):

<b><i>Discount:</i></b>		<b><i>Premium:</i></b>	
<i>Interest Expense</i>	\$X	<i>Interest Expense</i>	\$X
<i>Discount on Bonds Payable</i>	\$X	<i>Premium on Bonds Payable</i>	\$X
<i>Cash</i>	\$X	<i>Cash</i>	\$X

5. Premiums and discounts may be amortized in one of two ways:
  1. ***Straight-line method.*** Amortization is computed by dividing the original discount or premium by the number of 6-month interest periods in the term of the bond issue. Note that this is very similar to the straight-line depreciation method used for fixed assets.
  2. ***Effective interest method.*** To apply the method, multiply the carrying value of the bond issue at the beginning of the period by the “effective semi-annual interest rate” (this is just the market rate of interest). This produces the interest expense to report, and the difference between it and the cash that will be paid is the amount of the discount or premium to amortize. Bond interest *amortization tables* that show the amount of interest expense and amortization, period by period through the life of the bond issue, should be prepared to aid in accounting for interest expense.
6. At maturity the discount or premium will have been completely amortized. Once the final interest payment is recorded, the maturity of the bonds may be journalized by debiting *Bonds Payable* and crediting *Cash* for face value:

<i>Bonds Payable</i>	\$X
<i>Cash</i>	\$X

- E. ***Bond Retirements*** (also called bond ***redemptions***) can occur when bonds are purchased on the open market (or are called in) and then retired.
  1. Bond retirements require that the *Bonds Payable* account along with any *Premium* or *Discount* account balance associated with the bonds be removed from accounts.

2. A debit or credit difference between the carrying value of the retired bonds and the cash paid is a gain or loss to be recorded from the retirement.

<b><u>Discount, Gain:</u></b>		<b><u>Premium, Gain:</u></b>	
<b>Bonds Payable</b>	\$X	<b>Bonds Payable</b>	\$X
<b>Discount on Bonds Payable</b>	\$X	<b>Premium on Bonds Payable</b>	\$X
<b>Cash</b>	\$X	<b>Cash</b>	\$X
<b>Gain on Retirement of Bonds</b>	\$X	<b>Gain on Retirement of Bonds</b>	\$X
<b><u>Discount, Loss:</u></b>		<b><u>Premium, Loss:</u></b>	
<b>Bonds Payable</b>	\$X	<b>Bonds Payable</b>	\$X
<b>Loss on Retirement of Bonds</b>	\$X	<b>Loss on Retirement of Bonds</b>	\$X
<b>Discount on Bonds Payable</b>	\$X	<b>Premium on Bonds Payable</b>	\$X
<b>Cash</b>	\$X	<b>Cash</b>	\$X

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**Here's an Example!** Kaldon Corporation uses the straight-line method to amortize discounts and premiums, and the company issues 100 bonds on January 1, 20X1. The bonds have a \$1,000 par value, a 6% contract rate, and a 2-year term. Interest is paid semi-annually.

- (1) Record the issuance of the bonds and all the entries made during its 2-year life, and its final redemption at maturity assuming the bonds were issued at 96% of par value.
- (2) Repeat your entries assuming the bonds are issued at 104% of par value.
- (3) Show how the bonds would be reported on the balance sheet after each of your entries.
- (4) In both cases (premium and discount) show the entry that would have been made had the bonds been redeemed at a price of 101% of par value on January 1, 20X1.

(See below for the solution.)



Click the link below to play a video presentation that “walks you through” the solution to the first part of this example and discusses other pertinent topics regarding bonds and accounting for them.

[Link to Bond Transactions Presentation – Part I](#)

<b>(1). Issue price = \$96,000</b>				<b>(3).</b>	
				<u><b>Balance Sheet</b></u>	
1/1/X1	Cash	96,000		Bonds Payable	100,000
	Discount on Bonds Payable	4,000		Discount on Bonds Payable	<u>(4,000)</u>
	Bonds Payable		100,000		96,000
<hr/>					
6/30/X1	Interest Expense	3,000		<u><b>Balance Sheet</b></u>	
	Cash		3,000	Bonds Payable	100,000
	Interest Expense	1,000		Discount on Bonds Payable	<u>(3,000)</u>
	Discount on Bonds Payable		1,000		97,000
<hr/>					
12/31/X1	Interest Expense	3,000		<u><b>Balance Sheet</b></u>	
	Cash		3,000	Bonds Payable	100,000
	Interest Expense	1,000		Discount on Bonds Payable	<u>(2,000)</u>
	Discount on Bonds Payable		1,000		98,000
<hr/>					
6/30/X2	Interest Expense	3,000		<u><b>Balance Sheet</b></u>	
	Cash		3,000	Bonds Payable	100,000
	Interest Expense	1,000		Discount on Bonds Payable	<u>(1,000)</u>
	Discount on Bonds Payable		1,000		99,000
<hr/>					
12/31/X2	Interest Expense	3,000		<u><b>Balance Sheet</b></u>	
	Cash		3,000	Bonds Payable	100,000
	Interest Expense	1,000		Discount on Bonds Payable	<u>0</u>
	Discount on Bonds Payable		1,000		100,000
<hr/>					
12/31/X2	Bonds Payable	100,000		<u><b>Balance Sheet</b></u>	
	Cash		100,000	Bonds Payable	0
				Discount on Bonds Payable	<u>0</u>
<i>Continued on following page</i>					

<i>Example, Continued</i>			
<b>(2). Issue price = \$104,000</b>		<b>(3).</b>	
1/1/X1	Cash	104,000	<u>Balance Sheet</u>
	Premium on Bonds Payable	4,000	Bonds Payable
	Bonds Payable	100,000	100,000
			Premium on Bonds Payable
			<u>4,000</u>
			<u>104,000</u>
<hr/>			
6/30/X1	Interest Expense	3,000	<u>Balance Sheet</u>
	Cash	3,000	Bonds Payable
			100,000
	Premium on Bonds Payable	1,000	Premium on Bonds Payable
	Interest Expense	1,000	<u>3,000</u>
			<u>103,000</u>
<hr/>			
12/31/X1	Interest Expense	3,000	<u>Balance Sheet</u>
	Cash	3,000	Bonds Payable
			100,000
	Premium on Bonds Payable	1,000	Premium on Bonds Payable
	Interest Expense	1,000	<u>2,000</u>
			<u>102,000</u>
<hr/>			
6/30/X2	Interest Expense	3,000	<u>Balance Sheet</u>
	Cash	3,000	Bonds Payable
			100,000
	Premium on Bonds Payable	1,000	Premium on Bonds Payable
	Interest Expense	1,000	<u>1,000</u>
			<u>101,000</u>
<hr/>			
12/31/X2	Interest Expense	3,000	<u>Balance Sheet</u>
	Cash	3,000	Bonds Payable
			100,000
	Premium on Bonds Payable	1,000	Premium on Bonds Payable
	Interest Expense	1,000	<u>0</u>
			<u>100,000</u>
<hr/>			
12/31/X2	Bonds Payable	100,000	<u>Balance Sheet</u>
	Cash	100,000	Bonds Payable
			0
			Premium on Bonds Payable
			<u>0</u>
<hr/>			
<b>(4)</b>			
<u>Premium on B/P</u>			
	6/30/X1	1,000	4,000
	12/31/X1	1,000	1/1/X1
	bal., 12/31/X1	<u>2,000</u>	bal., 12/31/X1
<hr/>			
1/1/X2	Bonds Payable	100,000	First determine the balance in the premium account (unamortized premium), then record the retirement.
	Premium on Bonds Payable	2,000	
	Cash	101,000	
	Gain on Redemption	1,000	
<hr/>			
<u>Discount on B/P</u>			
	1/1/X1	4,000	1,000
	6/30/X1	1,000	12/31/X1
	bal., 12/31/X1	<u>2,000</u>	
<hr/>			
1/1/X2	Loss on Redemption	3,000	First determine the balance in the discount account (unamortized discount), then record the retirement.
	Bonds Payable	100,000	
	Discount on Bonds Payable	2,000	
	Cash	101,000	



Click the link below to complete the video presentation. This presentation discusses the last part of the exercise, and explains how bond retirements are recorded.

[Link to Bond Transactions Presentation – Part II](#)

4. To calculate the price that will be received for a bond or bond issue, the present value of the bond's face value and semi-annual interest payments must be calculated.
- C. Bond prices are **quoted** on a *percentage of par value* basis. For example, a \$1,000 par value bond that is selling for \$950 would be quoted at "95," or 95% or par. A quote of "101" would represent a price of \$1,010.

**V. Long-term Solvency Ratios.** These financial ratios evaluate the company's ability to remain solvent, paying liabilities when they come due through the long term. One of these ratios is the ***number of time interest charges earned*** (or ***times-interest-earned***) ratio:

$$\text{Time Interest Earned Ratio} = \frac{\text{Income Before Taxes} + \text{Interest Expense}}{\text{Interest Expense}}$$

- A. This ratio measures the number of times the company has "covered" its interest charges with earnings.
- B. Since the company might be driven out of business if it defaults on an interest payment, the ratio shows how well able the company is to earn the interest payments it must make to stay solvent. The more coverage the company has, the more creditworthy it is.

**-END-**