PART I

LEARNING OBJECTIVES, SUMMARY OVERVIEW, AND PROBLEMS

CHAPTER 1

FIXED-INCOME SECURITIES: DEFINING ELEMENTS

LEARNING OUTCOMES

The candidate should be able to:

- describe basic features of a fixed-income security;
- describe content of a bond indenture;
- compare affirmative and negative covenants and identify examples of each;
- describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities;
- describe how cash flows of fixed-income securities are structured;
- describe contingency provisions affecting the timing and/or nature of cash flows of fixed-income securities and whether such provisions benefit the borrower or the lender.

SUMMARY OVERVIEW

This chapter introduces the salient features of fixed-income securities while noting how these features vary among different types of securities. Important points include the following:

- The three important elements that an investor needs to know when investing in a fixed-income security are: (1) the bond's features, which determine its scheduled cash flows and thus the bondholder's expected and actual return; (2) the legal, regulatory, and tax considerations that apply to the contractual agreement between the issuer and the bondholders; and (3) the contingency provisions that may affect the bond's scheduled cash flows.
- The basic features of a bond include the issuer, maturity, par value (or principal), coupon rate and frequency, and currency denomination.
- Issuers of bonds include supranational organizations, sovereign governments, non-sovereign governments, quasi-government entities, and corporate issuers.
- Bondholders are exposed to credit risk and may use bond credit ratings to assess the credit quality of a bond.

- A bond's principal is the amount the issuer agrees to pay the bondholder when the bond matures.
- The coupon rate is the interest rate that the issuer agrees to pay to the bondholder each year. The coupon rate can be a fixed rate or a floating rate. Bonds may offer annual, semi-annual, quarterly, or monthly coupon payments depending on the type of bond and where the bond is issued.
- Bonds can be issued in any currency. Such bonds as dual-currency bonds and currency option bonds are connected to two currencies.
- The yield-to-maturity is the discount rate that equates the present value of the bond's future cash flows until maturity to its price. Yield-to-maturity can be considered an estimate of the market's expectation for the bond's return.
- A plain vanilla bond has a known cash flow pattern. It has a fixed maturity date and pays a fixed rate of interest over the bond's life.
- The bond indenture or trust deed is the legal contract that describes the form of the bond, the issuer's obligations, and the investor's rights. The indenture is usually held by a financial institution called a trustee, which performs various duties specified in the indenture.
- The issuer is identified in the indenture by its legal name and is obligated to make timely payments of interest and repayment of principal.
- For asset-backed securities, the legal obligation to repay bondholders often lies with a separate legal entity—that is, a bankruptcy-remote vehicle that uses the assets as guarantees to back a bond issue.
- How the issuer intends to service the debt and repay the principal should be described in the indenture. The source of repayment proceeds varies depending on the type of bond.
- Collateral backing is a way to alleviate credit risk. Secured bonds are backed by assets or financial guarantees pledged to ensure debt payment. Examples of collateral-backed bonds include collateral trust bonds, equipment trust certificates, mortgage-backed securities, and covered bonds.
- Credit enhancement can be internal or external. Examples of internal credit enhancement include subordination, overcollateralization, and reserve accounts. A bank guarantee, a surety bond, a letter of credit, and a cash collateral account are examples of external credit enhancement.
- Bond covenants are legally enforceable rules that borrowers and lenders agree on at the time of a new bond issue. Affirmative covenants enumerate what issuers are required to do, whereas negative covenants enumerate what issuers are prohibited from doing.
- An important consideration for investors is where the bonds are issued and traded, because it affects the laws, regulation, and tax status that apply. Bonds issued in a country in local currency are domestic bonds if they are issued by entities incorporated in the country and foreign bonds if they are issued by entities incorporated in another country. Eurobonds are issued internationally, outside the jurisdiction of any single country and are subject to a lower level of listing, disclosure, and regulatory requirements than domestic or foreign bonds. Global bonds are issued in the Eurobond market and at least one domestic market at the same time.
- Although some bonds may offer special tax advantages, as a general rule, interest is taxed at the ordinary income tax rate. Some countries also implement a capital gains tax. There may be specific tax provisions for bonds issued at a discount or bought at a premium.
- An amortizing bond is a bond whose payment schedule requires periodic payment of interest and repayment of principal. This differs from a bullet bond, whose entire payment of principal occurs at maturity. The amortizing bond's outstanding principal amount is reduced to

zero by the maturity date for a fully amortized bond, but a balloon payment is required at maturity to retire the bond's outstanding principal amount for a partially amortized bond.
- Sinking fund agreements provide another approach to the periodic retirement of principal, in which an amount of the bond's principal outstanding amount is usually repaid each year throughout the bond's life or after a specified date.
- A floating-rate note, or floater, is a bond whose coupon is set based on a market reference rate (MRR) plus a spread. FRNs can be floored, capped, or collared. An inverse FRN is a bond whose coupon has an inverse relationship to the reference rate.
- Other coupon payment structures include bonds with step-up coupons, which pay coupons that increase by specified amounts on specified dates; bonds with credit-linked coupons, which change when the issuer's credit rating changes; bonds with payment-in-kind coupons, which allow the issuer to pay coupons with additional amounts of the bond issue rather than in cash; and bonds with deferred coupons, which pay no coupons in the early years following the issue but higher coupons thereafter.
- The payment structures for index-linked bonds vary considerably among countries. A common index-linked bond is an inflation-linked bond, or linker, whose coupon payments and/or principal repayments are linked to a price index. Index-linked payment structures include zero-coupon-indexed bonds, interest-indexed bonds, capital-indexed bonds, and indexed-annuity bonds.
- Common types of bonds with embedded options include callable bonds, putable bonds, and convertible bonds. These options are "embedded" in the sense that there are provisions provided in the indenture that grant either the issuer or the bondholder certain rights affecting the disposal or redemption of the bond. They are not separately traded securities.
- Callable bonds give the issuer the right to buy bonds back prior to maturity, thereby raising the reinvestment risk for the bondholder. For this reason, callable bonds have to offer a higher yield and sell at a lower price than otherwise similar non-callable bonds to compensate the bondholders for the value of the call option to the issuer.
- Putable bonds give the bondholder the right to sell bonds back to the issuer prior to maturity. Putable bonds offer a lower yield and sell at a higher price than otherwise similar non-putable bonds to compensate the issuer for the value of the put option to the bondholders.
- A convertible bond gives the bondholder the right to convert the bond into common shares of the issuing company. Because this option favors the bondholder, convertible bonds offer a lower yield and sell at a higher price than otherwise similar non-convertible bonds.

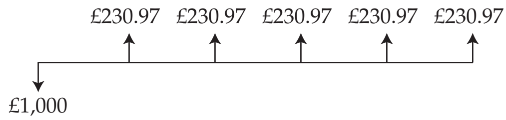
PROBLEMS

1. A 10-year bond was issued four years ago. The bond is denominated in US dollars, offers a coupon rate of 10% with interest paid semi-annually, and is currently priced at 102% of par. The bond's:
   A. tenor is six years.
   B. nominal rate is 5%.
   C. redemption value is 102% of the par value.
2. A sovereign bond has a maturity of 15 years. The bond is *best* described as a:
   A. perpetual bond.
   B. pure discount bond.
   C. capital market security.

3. A company has issued a floating-rate note with a coupon rate equal to the three-month MRR + 65 bps. Interest payments are made quarterly on 31 March, 30 June, 30 September, and 31 December. On 31 March and 30 June, the three-month MRR is 1.55% and 1.35%, respectively. The coupon rate for the interest payment made on 30 June is:
   A. 2.00%.
   B. 2.10%.
   C. 2.20%.
4. The legal contract that describes the form of the bond, the obligations of the issuer, and the rights of the bondholders can be *best* described as a bond's:
   A. covenant.
   B. indenture.
   C. debenture.
5. Which of the following is a type of external credit enhancement?
   A. Covenants
   B. A surety bond
   C. Overcollateralization
6. An affirmative covenant is *most likely* to stipulate:
   A. limits on the issuer's leverage ratio.
   B. how the proceeds of the bond issue will be used.
   C. the maximum percentage of the issuer's gross assets that can be sold.
7. Which of the following *best* describes a negative bond covenant? The issuer is:
   A. required to pay taxes as they come due.
   B. prohibited from investing in risky projects.
   C. required to maintain its current lines of business.
8. A South African company issues bonds denominated in pound sterling that are sold to investors in the United Kingdom. These bonds can be *best* described as:
   A. Eurobonds.
   B. global bonds.
   C. foreign bonds.
9. Relative to domestic and foreign bonds, Eurobonds are *most likely* to be:
   A. bearer bonds.
   B. registered bonds.
   C. subject to greater regulation.
10. An investor in a country with an original issue discount tax provision purchases a 20-year zero-coupon bond at a deep discount to par value. The investor plans to hold the bond until the maturity date. The investor will *most likely* report:
   A. a capital gain at maturity.
   B. a tax deduction in the year the bond is purchased.
   C. taxable income from the bond every year until maturity.
11. A bond that is characterized by a fixed periodic payment schedule that reduces the bond's outstanding principal amount to zero by the maturity date is *best* described as a:
   A. bullet bond.
   B. plain vanilla bond.
   C. fully amortized bond.
12. If interest rates are expected to increase, the coupon payment structure *most likely* to benefit the issuer is a:
   A. step-up coupon.
   B. inflation-linked coupon.
   C. cap in a floating-rate note.

13. Investors who believe that interest rates will rise *most likely* prefer to invest in:
    A. inverse floaters.
    B. fixed-rate bonds.
    C. floating-rate notes.
14. A 10-year, capital-indexed bond linked to the Consumer Price Index (CPI) is issued with a coupon rate of 6% and a par value of 1,000. The bond pays interest semi-annually. During the first six months after the bond's issuance, the CPI increases by 2%. On the first coupon payment date, the bond's:
    A. coupon rate increases to 8%.
    B. coupon payment is equal to 40.
    C. principal amount increases to 1,020.
15. The provision that provides bondholders the right to sell the bond back to the issuer at a predetermined price prior to the bond's maturity date is referred to as:
    A. a put provision.
    B. a make-whole call provision.
    C. an original issue discount provision.
16. Which of the following provisions is a benefit to the issuer?
    A. Put provision
    B. Call provision
    C. Conversion provision
17. Relative to an otherwise similar option-free bond, a:
    A. putable bond will trade at a higher price.
    B. callable bond will trade at a higher price.
    C. convertible bond will trade at a lower price.
18. Which type of bond *most likely* earns interest on an implied basis?
    A. Floater
    B. Conventional bond
    C. Pure discount bond
19. Clauses that specify the rights of the bondholders and any actions that the issuer is obligated to perform or is prohibited from performing are:
    A. covenants.
    B. collaterals.
    C. credit enhancements.
20. Which of the following type of debt obligation *most likely* protects bondholders when the assets serving as collateral are non-performing?
    A. Covered bonds
    B. Collateral trust bonds
    C. Mortgage-backed securities
21. Which of the following *best* describes a negative bond covenant? The requirement to:
    A. insure and maintain assets.
    B. comply with all laws and regulations.
    C. maintain a minimum interest coverage ratio.
22. Contrary to positive bond covenants, negative covenants are *most likely*:
    A. costlier.
    B. legally enforceable.
    C. enacted at time of issue.

23. A five-year bond has the following cash flows:



The bond can *best* be described as a:

A. bullet bond.

B. fully amortized bond.

C. partially amortized bond.

24. Investors seeking some general protection against a poor economy are *most likely* to select a:

A. deferred coupon bond.

B. credit-linked coupon bond.

C. payment-in-kind coupon bond.

25. The benefit to the issuer of a deferred coupon bond is *most likely* related to:

A. tax management.

B. cash flow management.

C. original issue discount price.

26. Which of the following bond types provides the *most* benefit to a bondholder when bond prices are declining?

A. Callable

B. Plain vanilla

C. Multiple put

27. Which type of call bond option offers the *greatest* flexibility as to when the issuer can exercise the option?

A. Bermuda call

B. European call

C. American call

28. Which of the following *best* describes a convertible bond's conversion premium?

A. Bond price minus conversion value

B. Par value divided by conversion price

C. Current share price multiplied by conversion ratio