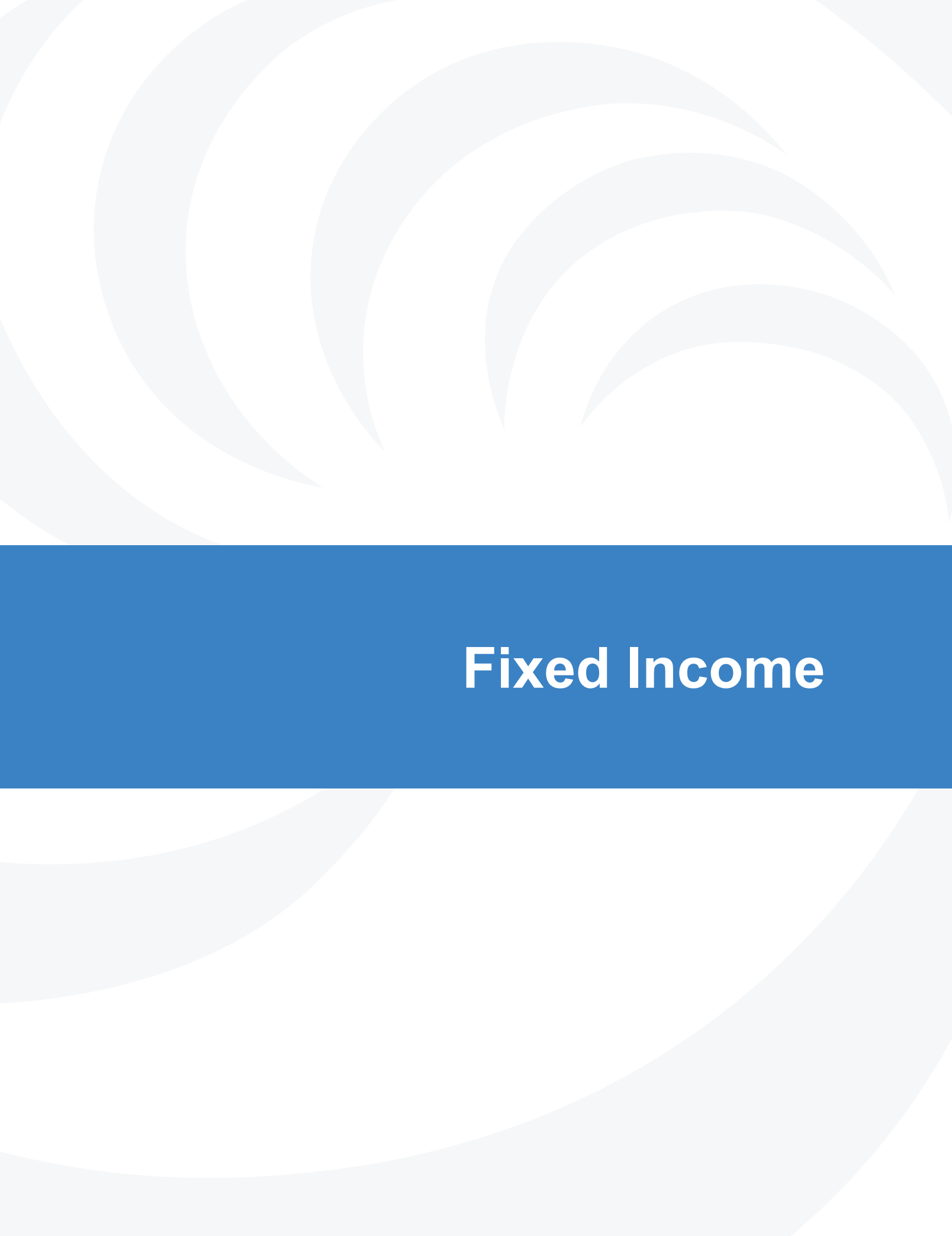




Fixed Income



Learning Module 1

Fixed-Income Instrument Features



LOS: Describe the features of a fixed-income security.

LOS: Describe the content of a bond indenture and contrast affirmative and negative covenants.

Introduction

Fixed-income instruments are used to borrow money. Bonds and loans are the most common types of fixed-income instruments. Loans are typically made by banks when lending to an individual or company. Bonds are typically sold to large numbers of investors by governments, companies, and special purpose entities, usually for larger amounts of money. Loans and bonds are economically similar. They differ primarily in that bonds are created with more standardized terms than loans, which makes bonds easier to trade.

In addition to being vehicles for borrowing funds, fixed-income instruments are widely held as investments by individuals and institutions.

Recognizing the following relationships will facilitate your understanding of the material:

- The higher (lower) the coupon rate on a bond, the higher (lower) its price.
- An increase (decrease) in interest rates or the required yield on a bond leads to a decrease (increase) in price: bond prices and yields are inversely related.
- The riskier the bond, the higher the yield required by investors to purchase the bond, and the lower the bond's price.

Features of Fixed-Income Securities



LOS: Describe the features of a fixed-income security.

The important elements of fixed-income securities include:

- The issuer of the bond
- The maturity of the bond
- The par value of the bond
- The coupon rate offered on the bond and the coupon payment frequency
- The currency in which bond payments will be made to investors

Note that this section focuses on "traditional" or nonsecuritized bonds.

Issuer

Bond issuers can be classified based on their characteristics. Major types of issuers include:

- Supranational organizations (eg, the World Bank and the International Monetary Fund)
- Sovereign (national) governments (eg, the United States)
- Nonsovereign (local) governments (eg, the state of Pennsylvania in the United States)
- Quasi-government entities, agencies owned or sponsored by governments (eg, the postal services in many countries, such as La Poste in France)
- Companies or corporate issuers, including financial issuers (eg, banks) and nonfinancial issuers (eg, pharmaceuticals)
- Special purpose entities created to hold assets such as commercial mortgages or credit card receivables, the cash flows from which are used to pay investors interest and principal

Maturity

The maturity date of a bond refers to the date when the issuer is obligated to repay the entire outstanding principal on the bond. A related concept is the term to maturity or the tenor of the bond, which refers to the length of time remaining until the bond's maturity date.

- Fixed-income securities expected to mature in one year or less from their issuance are known as money market securities (eg, commercial paper and certificates of deposit [CDs]).
- Fixed-income securities expected to mature more than one year from their issuance are referred to as capital market securities.
- Fixed-income securities that have no stated maturity are known as perpetual bonds.

Principal (Par or Face Value)

The par value (also known as face value, nominal value, redemption value, or maturity value) of a bond refers to the principal amount that the issuer promises to repay bondholders on the maturity date. Bond prices are usually quoted as a percentage of their par value. For example, if a given bond's par value is \$1,000, a quote of 90 implies that the bond's current price is \$900 ($= 90\% \times \$1,000$).

- When a bond's price is above 100 (% of par), it is said to be trading at a premium.
- When a bond's price is at 100 (% of par), it is said to be trading at par.
- When a bond's price is below 100 (% of par), it is said to be trading at a discount.

Coupon Rate and Frequency

The coupon rate of a bond refers to the annual interest rate that the issuer promises to pay bondholders until the bond matures. The amount of interest paid each year by the issuer is known as the coupon and is calculated by multiplying the coupon rate by the bond's par value. For example, given a coupon rate of 3% for a bond with a par value of \$1,000, the annual interest paid by the issuer will be \$30 ($= 3\% \times \$1,000$). Note that the bond indenture may call for coupon payments annually, semiannually, quarterly, or monthly. So, continuing with the previous example, if it were a semiannual-pay bond, the issuer would make \$15 coupon payments every six months during the bond's term.

Note that some bonds do not make any interest payments until maturity. These zero-coupon (or pure discount) bonds are issued at a discount to par value since the coupon of $0 <$ the required yield and is redeemed at par (the issuer pays the entire par amount to investors at the maturity date). The difference between the discounted purchase price and the par value is effectively the interest on the security.

Various coupon structures, including variable coupon rates, are discussed in a later learning module.

Seniority

The seniority of a bond identifies its ranking regarding the priority of its claim on the cash flows and assets of the issuer and is a primary factor in determining the risk of a fixed-income security. Senior debt must be paid off first in the event of a company liquidation or bankruptcy reorganization. Junior debt and subordinated debt have a lower priority of claim relative to senior debt and will only receive payments after the senior debt claims have been satisfied.

Contingency Provisions

Contingency provisions are clauses included in bond indentures that allow specified actions to be taken based on the occurrence of some condition or event. The most common type of contingency provision reflects the existence of embedded options, giving one party to the bond the right to exercise some action at their discretion:

- Issuers may have the right to call a bond before its maturity.
- Investors may have a right to put the bond back to its issuer before its maturity or to convert a bond into the issuer's common stock.

Embedded options have features similar to put or call option contracts that trade on exchanges or over the counter. However, embedded options cannot trade separately from the bond in which they are embedded. The value of such bonds must be established by comparing them to otherwise similar bonds with no embedded options from the same issuer.

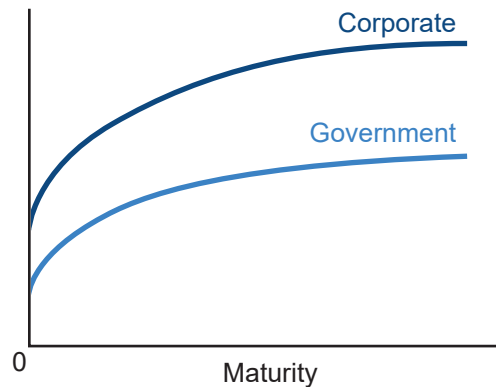
Yield Measures

Market participants use several different yield measures to describe a bond:

- The current yield or running yield is the bond's annual coupon amount as a percentage of its current price (not par value).
 - For example, the current yield of a \$1,000 par bond with a coupon rate of 5% and a current price of \$980 equals 5.102% [= (50 / 980) × 100].
- The yield-to-maturity (YTM) is also known as the yield-to-redemption or the redemption yield. It is calculated as the discount rate that equates the present value of a bond's expected future cash flows until maturity to its current price.
 - Essentially, the YTM represents the internal rate of return on the bond's expected cash flows. Stated differently, the YTM represents the annual return that an investor will earn on a bond if (1) she purchases it today (for its current price), (2) holds it until maturity, and (3) reinvests all interim cash flows at the stated YTM.
 - All else being equal, a bond's yield-to-maturity is inversely related to its price: the lower (higher) the YTM or discount rate, the higher (lower) the bond's current price.

Yield Curves

Yield curves are graphs that show the YTM's for bonds across different maturities. The YTM's on a given yield curve should be from bonds of the same issuer or from bonds of different issuers with the same or similar credit ratings.

Exhibit 1 Yield curves

In Exhibit 1, the upward slope from shorter to longer maturities indicates an economic environment where higher expected returns are demanded on longer maturity bonds since they expose investors to more risk. Yield curves can also be downward-sloping, indicating that longer-term bonds offer less return than shorter-term bonds, or "flat," indicating constant yields over time.

Also, note how the corporate yield curve is above the government yield curve. That indicates that for any given maturity, corporate bonds are riskier than government bonds due to greater risk (eg, credit, liquidity) over the same time horizon.

Bond Indentures and Covenants



LOS: Describe the content of a bond indenture and contrast affirmative and negative covenants.

Bond Indentures

A bond is a contractual agreement between the issuer and the bondholder. The bond indenture is the legal contract that describes the form of the bond, the obligations of the issuer, and the rights of bondholders.

Since there are (typically) many investors in a single bond issue, the issuer does not make a direct agreement with each of them individually. Instead, the indenture is held by a trustee who, although appointed by the issuer, owes a fiduciary duty to bondholders. The trustee is primarily responsible for ensuring that the issuer complies with the obligations specified in the bond indenture. Further, in the event of a default, the trustee is responsible for calling meetings of bondholders to determine an appropriate course of action and may also bring legal action against the issuer on behalf of bondholders.

Sources of Repayment

The bond indenture also (usually) specifies how the issuer plans to make debt service payments (interest and principal).

Sovereign bonds are backed by the "full faith and credit" of the national government. Sovereign governments have the power to raise taxes and/or (often) to create the money to repay bonds.

Nonsovereign government debt can usually be repaid through the following sources:

- The general taxing authority of the issuer
- Cash flows from the project the bonds were issued to finance
- Special taxes or fees specifically enacted to make interest and principal payments

Corporate bond issuers typically rely on their cash-flow-generating ability to repay bonds, which in turn depends on their financial strength and integrity. Corporate bonds typically entail a higher level of credit risk than sovereign bonds and therefore carry a higher yield.

Asset-backed securities (ABS), created through asset securitization, pay interest and principal from cash flows generated by the underlying pool of assets. Typical examples of securitized assets include commercial mortgages, automobile loans, and credit card receivables.

- Most ABS consist of multiple classes of securities (tranches).
- The various tranches of an ABS have different priority of claims on cash flows and exposure to credit losses on the underlying asset pool.

Bond Covenants

Covenants are legally enforceable rules agreed upon by the borrower/issuer and lenders/investors at the time of bond issuance.

Affirmative covenants place requirements on issuers to take specified actions. They are typically administrative in nature, so they do not lead to additional costs for the issuer. Affirmative covenants do not significantly restrict the issuer's ability to make business decisions. Examples of affirmative covenants include clauses requiring issuers to:

- Make timely payments to bondholders
- Comply with all laws and regulations
- Maintain the issuer's current line(s) of business
- Insure and maintain assets
- Pay taxes
- *Pari passu* (ie, equal) treatment for holders of different debt obligations of equal seniority
- Accept cross-default treatment of all debt (ie, considered to be in default on all debt obligations by defaulting on any one debt obligation)

Negative covenants are restrictions placed on issuers. Negative covenants usually entail more costs than affirmative covenants and often constrain an issuer in operating the business. These restrictions protect bondholders from dilution of their claims, asset withdrawals, substitutions, or inefficient investments by the issuer. Examples of negative covenants include restrictions on:

- Issuing additional debt when the company can sustain its financial condition
- Issuing bonds with a superior priority of claims to existing bonds
- Issuing new debt secured by assets not previously pledged as collateral, thereby reducing the protection of unsecured bondholders
- Distributions to shareholders (eg, dividends and share repurchases), to ensure that sufficient cash is available for debt service going forward
- Asset disposals, as such restrictions protect bondholders from a breakup of the company
- Investments, to prevent the issuer from making risky or speculative investments
- Mergers and acquisitions, to ensure that if the issuing company is sold, the surviving company or acquirer will have the ability to make debt service payments

Note that the aim of negative covenants is to protect bondholders by ensuring that the issuer does not take any action that may hinder its ability to satisfy debt obligations. Bondholders should refrain from being too specific or restrictive when it comes to covenants, as such provisions may force the issuer into default even when it is avoidable.



Learning Module 2

Fixed-Income Cash Flows and Types



LOS: Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.

LOS: Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.

Fixed-Income Cash Flow Structures



LOS: Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.

A bond's indenture specifies the pattern of interest and principal cash flow and factors that may result in variations in cash flow patterns. These cash flows affect risks faced by issuers and investors, as well as expected returns. Three common fixed-income structures are bullet bonds, fully amortizing bonds, and partially amortizing bonds.

A bullet bond is one that only makes periodic interest payments until maturity, at which time the entire principal amount is due to bondholders.

- For a fixed-rate bullet, the interest payment is for the same money amount each period, calculated as the Interest rate $\times$ Face value.
- The payment at maturity consists of the same periodic interest payment plus the entire principal amount.

Exhibit 1 shows the cash flow schedule for a bullet bond with a par value of \$1,000 and a fixed-rate coupon of 8% that matures in 5 years and makes annual payments.

Exhibit 1 Bullet bond cash flows**Bullet bond**

Year	Investor cash flows (\$)	Interest payment (\$)	Principal repayment (\$)	Outstanding principal at the end of the year (\$)
0	-1,000.00			1,000.00
1	80.00	80.00	0.00	1,000.00
2	80.00	80.00	0.00	1,000.00
3	80.00	80.00	0.00	1,000.00
4	80.00	80.00	0.00	1,000.00
5	1,080.00	80.00	1,000.00	0.00

Amortizing Debt

A fully amortizing bond is one that makes periodic interest and principal payments during each period over the life of the bond.

- The payment due each period is for the same amount of money. However, the amounts of interest and principal vary over time. The interest portion of each payment decreases over time while the principal portion increases over time.
- The payment due at maturity is for the same amount as all earlier periods. Nonetheless, due to the periodic repayment (ie, amortization) of principal, the par amount has been fully repaid with the final equal periodic payment.

Exhibit 2 shows the cash flows for a fully amortizing bond.

Exhibit 2 Fully amortizing bond cash flows**Fully amortized bond**

Year	Investor cash flows (\$)	Interest payment (\$)	Principal repayment (\$)	Outstanding principal at the end of the year (\$)
0	-1,000.00			1,000.00
1	250.46	80.00	170.46	829.54
2	250.46	66.36	184.10	645.44
3	250.46	51.64	198.82	446.62
4	250.46	35.73	214.73	231.90
5	250.46	18.55	231.89	0.00

Exhibit 2 Fully amortizing bond cash flows (Continued)

Steps	Calculations
Calculate equal annual payments (ie, 5-year annuity)	$N = 5$; $PV = 1000$ $I/Y = 8$; $FV = 0$ $CPT\ PMT = \$250.46$
Calculate 1 st year interest (i) and principal (p) payments	$i = 0.08 \times 1000 = 80$ $p = 250.46 - 80 = 170.46$
Calculate 2 nd year interest (i) and principal (p) payments	$i = 0.08 \times (1000 - 170.46) = 66.36$ $p = 250.46 - 66.36 = 184.10$
Calculate 3 rd year interest (i) and principal (p) payments	$i = 0.08 \times (829.54 - 184.10) = 51.64$ $p = 250.46 - 51.64 = 198.82$
Calculate 4 th year interest (i) and principal (p) payments	$i = 0.08 \times (645.44 - 198.82) = 35.73$ $p = 250.46 - 35.73 = 214.73$
Calculate 5 th year interest (i) and principal (p) payments	$i = 0.08 \times (446.62 - 214.73) = 18.55$ $p = 250.46 - 18.55 = 231.89$

A partially amortized bond also makes partial repayments of principal each period. However, since the periodic payments are for a lesser money amount, the principal is not fully repaid prior to maturity. Therefore, a balloon payment is required at maturity to repay the still outstanding principal amount; in this case the principal due at maturity is \$200.

- Each period's payment due is equal, but, like a fully amortized bond, the amounts of interest and principal vary over time. The interest portion of each payment decreases over time, while the principal portion increases over time.
- The payment due at maturity is greater than the previous periodic payments to repay the principal in full.

Exhibit 3 shows the cash flows of a partially amortized bond with a balloon payment at maturity.

Exhibit 3 Partially amortized bond cash flows

Partially amortized bond

Year	Investor cash flows (\$)	Interest payment (\$)	Principal repayment (\$)	Outstanding principal at the end of the year (\$)
0	-1,000.00			1,000.00
1	216.37	80.00	136.37	863.63
2	216.37	69.09	147.27	716.35
3	216.37	57.31	159.06	557.29
4	216.37	44.58	171.78	385.52
5	*416.37	30.84	385.52	0.00

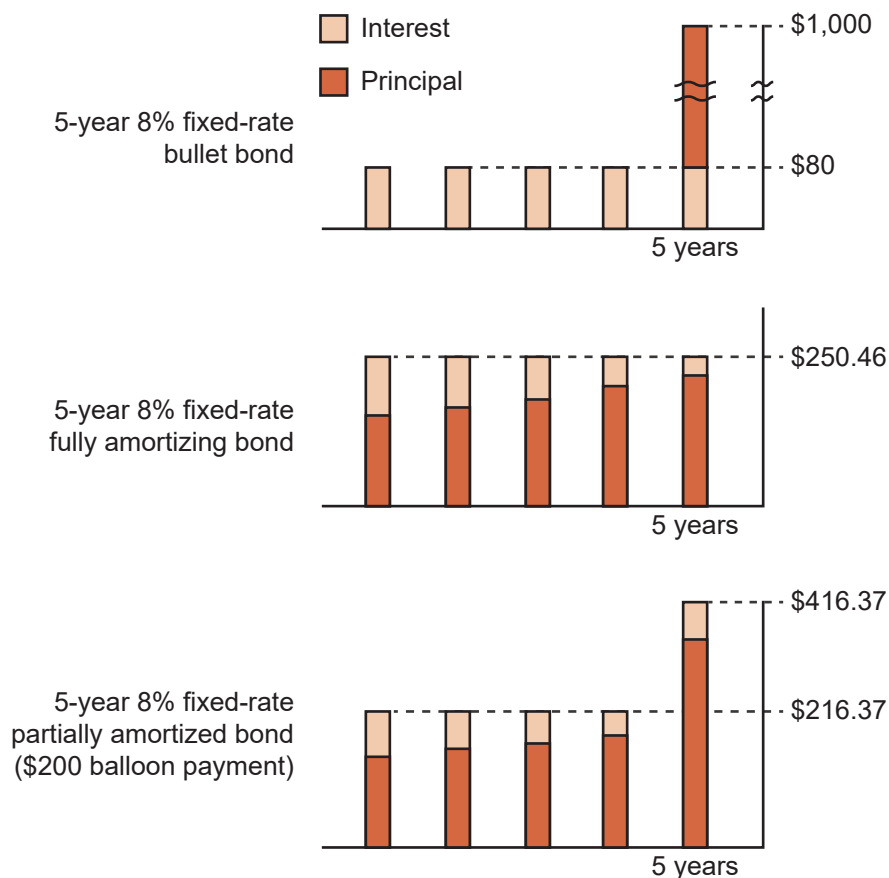
*416.37 = 200 (balloon payment) + 216.37

Steps	Calculations
Calculate PV of bullet payment	$N = 5$; $FV = 200$; $I/Y = 8$ CPT PV = \$136.12
Calculate equalannual payments (ie, 5-year annuity)	$N = 5$; $PV = (1000 - 136.12)$ $I/Y = 8$; $FV = 0$ CPT PMT = 216.37
Calculate 1 st year interest (i) and principal (p) payments	$i = 0.08 \times 1000 = 80$ $p = 216.37 - 80 = 136.37$
Calculate 2 nd year interest (i) and principal (p) payments	$i = 0.08 \times (1000 - 136.37) = 69.09$ $p = 216.37 - 69.09 = 147.28$
Calculate 3 rd year interest (i) and principal (p) payments	$i = 0.08 \times (863.63 - 147.28) = 57.31$ $p = 216.37 - 57.31 = 159.06$
Calculate 4 th year interest (i) and principal (p) payments	$i = 0.08 \times (716.35 - 159.06) = 44.58$ $p = 216.37 - 44.58 = 171.79$

*Principal before addition of \$200 balloon

Exhibit 4 contains diagrams that illustrate the principal and interest cash flows shown in Exhibits 1–3.

Exhibit 4 Cash flows on bullet, fully amortizing, and partially amortizing bonds



Two other types of principal amortization structures common in fixed-income instruments are sinking fund arrangements and cash flow waterfalls. Sinking fund arrangements are found in government and corporate bonds. Cash flow waterfalls are a common feature in mortgage-backed securities (MBS) and asset-backed securities (ABS).

A sinking fund arrangement requires the issuer to repay a specified portion of the principal amount every year throughout the bond's life or after a specified date. For example, a \$100 million issue with a term of 10 years could require the issuer to redeem bonds worth \$10 million par each year starting in Year 6 of the issue. Other sinking fund variations can require the issuer to retire a constant percent of the outstanding principal or a steadily increasing amount of principal each year.

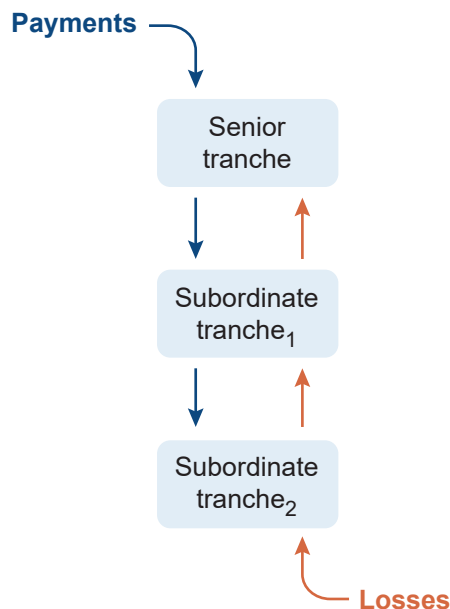
Exhibit 5 Sinking fund arrangement

<u>Year</u>	<u>Beginning principal balance</u>	<u>Sinking fund payment</u>	<u>Ending principal balance</u>	
0			100.00	
1 to 5	100.00	—	100.00	
6	100.00	(10.00)	90.00	} Principal is reduced by 10% annually from Years 6 to 14 and completely retired in Year 15.
7	90.00	(9.00)	81.00	
8	81.00	(8.10)	72.90	
9	72.90	(7.29)	65.61	
10	65.61	(6.56)	59.05	
11	59.05	(5.90)	53.14	
12	53.14	(5.31)	47.83	
13	47.83	(4.78)	43.05	
14	43.05	(4.30)	38.74	
15	38.74	(38.74)	—	

Issuers usually have the ability to satisfy the sinking fund provision by retiring principal at the lowest of (1) market price, (2) par value, or (3) a specified sinking fund price.

From the bondholders' perspective, the advantage of a **sinking fund** arrangement is that it reduces credit risk; however, it creates reinvestment risk. Also, the issuer may be able to repurchase bonds for less than par value.

Cash flow waterfalls specify the priority of cash distributions when there are multiple classes of securities (ie, tranches) being supported by a collateral pool, which is a common structure for MBS and ABS. Most frequently, interest will be paid on all tranches each period, but the principal will be returned according to a specified priority. In most structures, all principal distributions are paid only to the most senior tranche until it is retired. Only after the highest-ranking tranche is retired will the second most senior tranche receive any principal, and so on.

Exhibit 6 Waterfall ABS structure

Variable Interest Debt

Bonds and loans may have interest rates that reset over time. The coupon rate of a floating rate note (FRN) has two components: a market reference rate (MRR) plus a spread (also known as margin).

The spread is typically fixed and expressed in basis points (bps). A basis point is 0.01%. The spread on a FRN is determined at issuance and is based on the issuer's credit rating at that time. The higher the issuer's creditworthiness, the lower the spread.

The MRR resets periodically based on market conditions. As the MRR changes, the effective coupon rate on the FRN also changes.

FRNs have less interest rate risk (ie, risk of bond price changing due to changes in market interest rates) than fixed-rate bonds since as the coupon rate periodically resets it is brought in line with current market interest rates. If market interest rates rise (fall), the periodic coupon on a FRN increases (decreases). Therefore, FRNs are preferred by investors who expect interest rates to increase. However, note that FRN investors still face credit risk. If there is a decline in the perceived credit quality of the issuer (such that the fixed spread no longer adequately compensates investors for credit risk), the price of the FRN will fall below par value.

A **step-up bond** (which can have a fixed or floating coupon) has a coupon rate that increases by specified margins due to specified events or at predetermined dates. This coupon structure allows less creditworthy issuers to sell debt to investors who may otherwise not be willing to bear the credit risk exposure without the compensation of higher interest income to offset the impact of a potential adverse credit rating change. This structure is often found in loans to less creditworthy borrowers, which are referred to as **leveraged loans**. **Credit-linked notes** are debt securities in which coupon rates may be tied to financial covenants (eg, debt-to-equity ratio) or credit rating changes.

A **payment-in-kind (PIK)** feature allows the issuer to pay interest in the form of additional bonds instead of cash. They are preferred by issuers that are concerned about having sufficient cash flows in the future. Investors usually demand a higher yield on these bonds to compensate them for the higher credit risk and high leverage of the issuer.

Index-linked bonds have coupon payments and/or principal repayments based on a specified index. The most common index-linked bonds are **inflation-linked bonds**, which usually have coupon and/or principal payments linked to an index of consumer prices (eg, **Treasury Inflation Protection Securities**, or **TIPS**, issued by the US government are linked to the US Consumer Price Index [CPI]). Investors are attracted to inflation-linked bonds because they offer a long-term asset with a fixed real return that is protected against inflation risk.

The cash flows of an index-linked bond may be linked to a specified index via its interest payments, principal payments, or both.

- **Interest-indexed bonds:** Only coupon payments are adjusted to changes in the specified index. These bonds repay the fixed nominal principal at maturity. Thus, the inflation adjustment applies to the interest payments only.
- **Capital-indexed bonds:** The coupon rate is fixed, but the coupon payment varies since this rate is applied to a principal amount that is adjusted to reflect changes in the specified index. As a result, both interest payments and the principal repayment are adjusted for inflation.

Note that most sovereign inflation-indexed bonds are capital indexed. However, these bonds usually provide investors with some protection from deflations. Although a fall in the price index the bonds are linked to results in a decrease in a periodic coupon payment, the maturity value of these bonds is usually the greater of the original par value or the inflation-adjusted principal.

Zero-Coupon Structures

Zero-coupon bonds (zeros) do not pay periodic coupons. The entire amount of zero-coupon bond interest is received at maturity. These bonds are normally issued at a discount to their par value. The interest earned over the life of the bond is the difference between the price at issuance and the par value received at maturity.

An investment characteristic of zeros that is attractive to investors in certain situations is the absence of reinvestment risk over the time to maturity. There is no coupon to reinvest, which makes zeros attractive in falling interest rate environments and useful for funding future fixed obligations.

Deferred Coupon Structures

These bonds do not pay any coupon for the first few years after issuance but then pay a higher coupon than they normally would for the remainder of their terms. **Deferred coupon bonds** are usually preferred by issuers who want to conserve cash in the short run, or for project financing where cash generation will commence after an initial development phase. Deferred coupon bonds are usually priced significantly below par (like zeros, which are an extreme version of deferred coupon bonds).

Fixed-Income Contingency Provisions



LOS: Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.

Callable Bonds

Callable bonds give issuers the right to redeem (or call) all or part of a bond issue before maturity. This embedded option provides issuers with the ability to take advantage of (1) a decline in market interest rates and/or (2) an improvement in creditworthiness; either would allow the issuer to replace an existing, higher interest rate debt issue with a new issue that carries a lower interest rate.

The callable bond's indenture usually specifies the following details about the call provision:

- **Call price**, the price paid to bondholders, which normally varies depending on the timing of a bond call. The call price usually includes a call premium, which typically declines the longer the issuer delays calling the bond.
- **Call schedule**, which specifies the dates and prices at which the bond may be called.

Most bond call provisions specify the earliest (ie, first) call date at some time after the issuance. This feature of callable bonds is known as call protection. The call period is the time frame when a bond can be called.

The value of a callable bond and the issuer's right to call the bond depend on the callable bond's coupon rate and the YTM on the issuer's otherwise equivalent noncallable bonds. When the YTM on equivalent noncallable bonds is greater than the callable bond coupon rate, the issuer will not call the bond. So, in rising interest rate environments callable bond prices will fall, in line with the declining prices of noncallable bonds.

However, when interest rates on equivalent noncallable bonds are less than callable bond coupon rates, issuers are likely to exercise their right to call the callable bonds since they can be replaced with lower-cost debt. Therefore, in falling interest rate environments, callable bonds will not appreciate as much as equivalent noncallable bonds due to the issuer's ability to retire callable bonds at a fixed call price. During the call period, the call price effectively limits (ie, caps) the potential appreciation of a callable bond when interest rates decline. This is known as call risk.

A make-whole call feature usually requires the issuer to pay a relatively high redemption price, well above the current market value of the debt. Due to the expense of calling a bond this way, issuers rarely exercise this provision.



Example 1 Callable bonds

A 20-year bond, issued on Jan 20 2X13 at 98.515 per 100 par value, is callable in whole or in part every January 21, starting in 2X19. The call schedule is listed below:

Year	Call price
2X19	102.000
2X20	101.655
2X21	101.371
2X22	101.095
2X23	100.843
2X24	100.548
2X25	100.273
2X26 and thereafter	100.000

1. What is the length of call protection at issuance?
2. What is the call premium per €1000 of par value if the bond is called in 2X22?

Solution

1. The bond was issued in 2X13, and the first call date is in 2X19. Therefore, the bond had 6 years of call protection (ie, 2X19 – 2X13) at issuance.
2. Call prices are stated as a percentage of par value, so the call price in 2X22 is €1,010.95 ($= 101.095\% \times 1,000$). The call premium is the amount by which the call price exceeds the par value, so the call premium in 2X22 is €10.95 ($= 1,010.95 - 1,000$).

Puttable Bonds

Holders of **puttable bonds** have the right to sell (or put) the bond back to the issuer on specified dates at fixed prices (usually par) as defined in the bond's indenture. The embedded put option protects bondholders against an increase in interest rates. Rising interest rates reduce the value of equivalent nonputtable bonds. However, during the put period, a puttable bond can be sold back to the issuer at the prespecified price, allowing the investor to reinvest the redemption proceeds at the new (higher) interest rate.

Since the put benefits the bondholder, investors must pay more for a puttable bond than for an otherwise identical nonputtable bond. The difference in the value between a puttable bond and an otherwise identical nonputtable bond is the value of the embedded put option (which the bondholder has effectively purchased from the issuer).

Issuers can sell puttable bonds at a lower yield compared with otherwise identical nonputtable bonds. The difference between the yields reflects the cost of the embedded option investors are buying from the issuer.

The put price is an effective floor for a puttable bond's value. When interest rates decrease, puttable bond prices increase in line with the increased value of otherwise identical nonputtable bonds. However, when interest rates rise, puttable bond values do not decline below the put price, due to bondholders having the right to force the issuer to redeem the bonds at the prespecified price.

Convertible Bonds

A convertible bond gives bondholders the right to convert the bond into common shares of the bond issuer. Therefore, it can be viewed as a combination of a straight bond and an embedded call option on the issuer's stock. Convertible bonds may also include call or put provisions.

Convertible bonds are attractive to investors as the conversion (to equity) option allows them to benefit from price appreciation of the issuer's stock. On the other hand, if there is a decline in the issuer's share price (which causes a decline in the value of the embedded equity conversion/call option), the price of the convertible bond should not fall below the price of an otherwise identical nonconvertible bond. Due to these attractive investment characteristics, convertible bonds trade at lower yields and sell at higher prices than similar bonds without the conversion option. However, even the lower coupon rate typical of convertible bonds is usually higher than the dividend yield on the underlying equity.

An attraction of convertible bonds for issuers is that the lower yields result in lower interest expense relative to the interest costs of otherwise identical bonds without the conversion option. Furthermore, if the bonds are converted, the issuer's outstanding debt is reduced, replaced by the equity created by the conversion. Note, however, that this comes at the cost of dilution for existing shareholders.

Some terms relevant to the conversion provision are defined below:

- The **conversion price** is the price per share at which the convertible bond can be converted into shares.
- The **conversion ratio** is the number of common shares that each bond can be converted into. It is calculated as the par value divided by the conversion price. For example, given \$1,000 par and a conversion price of \$20, the conversion ratio is 50:1 or 50 ($= 1,000 / 20$) common shares per bond.
- The **conversion value** (ie, value of a bond based on the shares it is convertible into) is calculated as current share price multiplied by the conversion ratio. For example, given a current share price of \$25 and a conversion ratio of 50:1, the conversion value is \$1,250 ($= 25 \times 50$).
- The **conversion premium** (ie, amount by which a convertible bond's price exceeds its conversion value) equals a convertible bond's price minus its conversion value. For example, given a convertible bond's price of \$1,300 and a conversion value of \$1,250, the conversion premium equals \$50.
- Instead of issuing convertible bonds, some issuers sell bonds with attached **warrants**. Warrants are options granting the holder the right to buy the bond issuer's common shares at a fixed price until a specified expiration date. Although economically similar to convertible bonds, warrants are usually detachable (unlike the call option embedded in a convertible bond) and can trade separately from the bond after issuance.

The conversion of **contingent convertible bonds** (CoCos) depends on the occurrence of a specified event. CoCos issued by several European banks have their conversions tied to a deterioration of bank capital. Such CoCos differ from traditional convertible bonds in two ways:

- Unlike traditional convertible bonds, which are convertible at the option of the bondholder, these bank CoCos convert automatically upon the occurrence of a prespecified event.
- Unlike traditional convertible bonds, which are converted if the issuer's share price increases (ie, upside benefit), a contingent conversion of these bank CoCos results in a write-down value (ie, downside loss), which is adverse to the bondholder's interests.

To understand the workings of CoCos, consider a bank that is required to maintain core equity capital above a minimum level. To ensure continued adherence to capital requirements in the event of significant losses, the bank could issue CoCos. These CoCos are structured to automatically convert into equity if the bank suffers losses that reduce its equity capital below the minimum requirement. Since CoCos are set to convert automatically and conversion would force holders to take losses, they offer investors higher yields than otherwise similar bonds.

Legal, Regulatory, and Tax Considerations



LOS: Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.

Legal and Regulatory Considerations

The global bond market consists of national bond markets and the Eurobond market. There are no unified legal or regulatory requirements that apply to bond investors globally, which makes it important for investors to be aware of where a particular fixed-income security is issued and where it is traded as those factors determine which laws and regulations apply.

Domestic bonds are debt securities issued in a country by entities incorporated in that country. For example, bonds issued by Google Inc. in US dollars in the United States would be classified as domestic bonds. **Foreign bonds** are debt securities issued in one country by entities incorporated in a different country. For example, bonds issued by Toyota Motor Company in US dollars in the United States are classified as foreign bonds.

Eurobonds are debt securities issued and traded in the Eurobond market, a market that exists outside of the jurisdiction of any single country. Eurobonds are named based on the currency in which they are denominated. For example, Eurobonds denominated in US dollars are referred to as Eurodollar bonds, and Eurobonds denominated in Japanese yen are known as Euroyen bonds. An example of a Eurodollar bond is a Toyota Motor Company bond, denominated in US dollars, issued in Australia.

Eurobonds are usually:

- unsecured and underwritten by an international syndicate.
- less regulated than domestic and foreign bonds as they do not fall under the jurisdiction of any single country.
- bearer bonds (ie, no record of bond ownership is kept by the trustee). This is unlike most domestic and foreign bonds, which are usually registered so that the trustee maintains a record of ownership.

Note that Eurodollar bonds cannot be sold through a public offering in the US since they are not registered with the US Securities and Exchange Commission (SEC).

Global bonds are bonds that are issued simultaneously (1) in the Eurobond market and (2) in at least one domestic bond market. Simultaneously issuing bonds in different markets increases the likelihood that there will be sufficient demand for the issue and that investors will be able to participate in the issue regardless of their location.

Foreign bonds, Eurobonds, and global bonds are often referred to as international bonds.

The differences between domestic bonds, foreign bonds, Eurobonds, and global bonds are important to investors as these different types of bonds are subject to different legal, regulatory, and tax requirements. There are also differences in terms of frequency of interest payments and how interest payments are calculated, both of which influence the bond's cash flows and price. However, it is important to realize that the currency denomination of a bond has a bigger influence on its price than where it is issued or traded. This is because a bond's price is influenced by interest rates, and a bond's coupon rate and yield are strongly linked to the bond's denominated currency.

Tax Considerations

Specific tax treatment often varies by type of bond and by jurisdiction.

- Interest income is usually taxed as ordinary income.
- In the US, interest income on bonds issued by states and cities (ie, municipal bonds) is often exempt from federal income tax and state income tax in the state of issue.
- Interest payments may have tax withheld, depending on the jurisdiction.
- Gains or losses on bonds sold before maturity are usually treated as capital gains or losses.
- Capital gains earned on bond sales prior to maturity are usually taxed at a lower rate than interest income. Furthermore, some countries impose lower tax rates on gains from investments held over a longer period than the tax rate on gains from shorter-term holdings. Some countries do not tax capital gains at all.
- For a bond issued at a discount, the difference between the par value and the original issue price is known as the original issue discount. In some countries (including the US), a prorated portion of the original issue discount is taxed as interest income each year. In other countries, the original issue discount is taxed as a capital gain when the bond matures.
- For bonds at a premium, investors may treat the premium as a loss, and either (1) deduct a prorated portion of the premium from taxable income each year until maturity, or (2) declare the entire premium as a capital loss when the bond is redeemed at maturity.

Learning Module 3

Fixed-Income Issuance and Trading



LOS: Describe fixed-income market segments and their issuer and investor participants.

LOS: Describe types of fixed-income indexes.

LOS: Compare primary and secondary fixed-income markets to equity markets.

Introduction

A frequently underappreciated aspect of fixed-income markets is the sheer number of different instruments outstanding. Not only is the global fixed-income market larger than the global equity market based on the value of the instruments, the skew in favor of debt versus equity is even greater when the comparison is based on the number of different securities and types of instruments.

Most corporate issuers have only one or two classes of common equity outstanding. Yet large companies can have many dozens of debt issues trading at any one time. Sovereign governments do not issue equity securities, but large, developed-economy governments (eg, US, Japan) can have hundreds of debt securities outstanding at any given time.

Fixed-Income Segments, Issuers, and Investors



LOS: Describe fixed-income market segments and their issuer and investor participants.

Fixed-income instruments are categorized according to the features that characterize significant subsets of the universe of outstanding bonds and loans. Sometimes these instruments are classified based on features such as their interest rate (eg, fixed or floating), currency denomination, geography (eg, country, region), market's level of development (eg, emerging or frontier market), or ESG characteristics. However, the three dimensions most commonly used in categorizing fixed-income instruments are issuer type, credit quality, and time to maturity.

Categorizing fixed-income instruments by issuer type often recognizes broad categories such as governments, corporates, or special purpose entities (used in asset securitizations). However, each of these may be divided into subcategories. For example, governments can be categorized as sovereign or local governments. Corporates can be split between financial and nonfinancial corporations. And other special categories are sometimes recognized, such as supranationals (eg, the World Bank).

Issuer creditworthiness is reflected in **credit ratings** conferred by **credit rating agencies**. The ratings of major agencies are shown in Exhibit 1:

Exhibit 1 Bond credit ratings of major agencies

	Standard & Poor's	Moody's
Investment grade	AAA	Aaaa
	AA	Aa
	A	A
	BBB	Baa
Below investment grade	BB	Ba
	B	B
	CCC	Caaa
	CC	Ca
	C	C
	D	D

Bonds with a credit rating of Baa3 or above by Moody's, or BBB– or above by S&P are classified as **investment-grade** bonds. Investment-grade bond defaults are relatively uncommon, so these securities generally provide more stable cash flows. On the other hand, bonds with ratings below these levels are classified as noninvestment-grade (or **high-yield**, speculative, or junk) bonds. The high yield category includes both new issues from corporations of lesser creditworthiness and bonds originally rated investment grade that were downgraded after issuance (ie, **fallen angels**).

Investors demand higher expected returns on high-yield bonds as compensation for the greater credit risk; in fact, high-yield debt often has expected returns similar to equity securities to compensate investors for the higher probability of default.

This distinction between investment grade and high yield can be significant for institutional investors since by regulation or agreement they may be prohibited from investing in or continuing to hold less-than-investment-grade bonds.

Sovereign debt typically exposes investors to the least credit risk due to governments' legal authority to impose and collect taxes. Due to the generally larger tax base and consequent safety, developed-country sovereign debt is widely held by foreign investors and central banks.

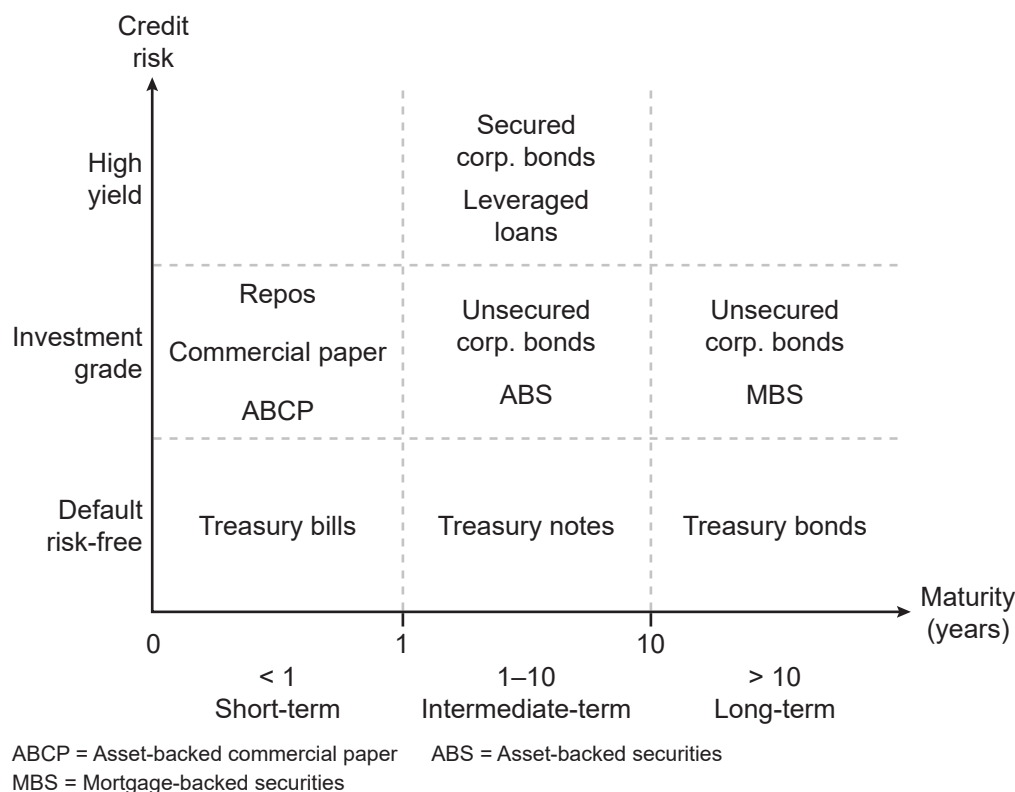
Fixed-income securities are frequently classified based on their time to maturity. This classification may be based on either their original (at issuance) maturity or the time remaining to maturity at the time a bond is being evaluated.

Based on their time to maturity at issuance, securities with:

- one year or less to maturity are referred to as money market instruments (eg, T-bills, commercial paper, negotiable certificates of deposit).
- more than one year to maturity are referred to as bonds or capital market instruments.

Exhibit 2 provides an overview of the types of issuers and instruments, categorized by credit risk and time to maturity at issuance:

Exhibit 2 Fixed-income instruments categorized by maturity and credit risk

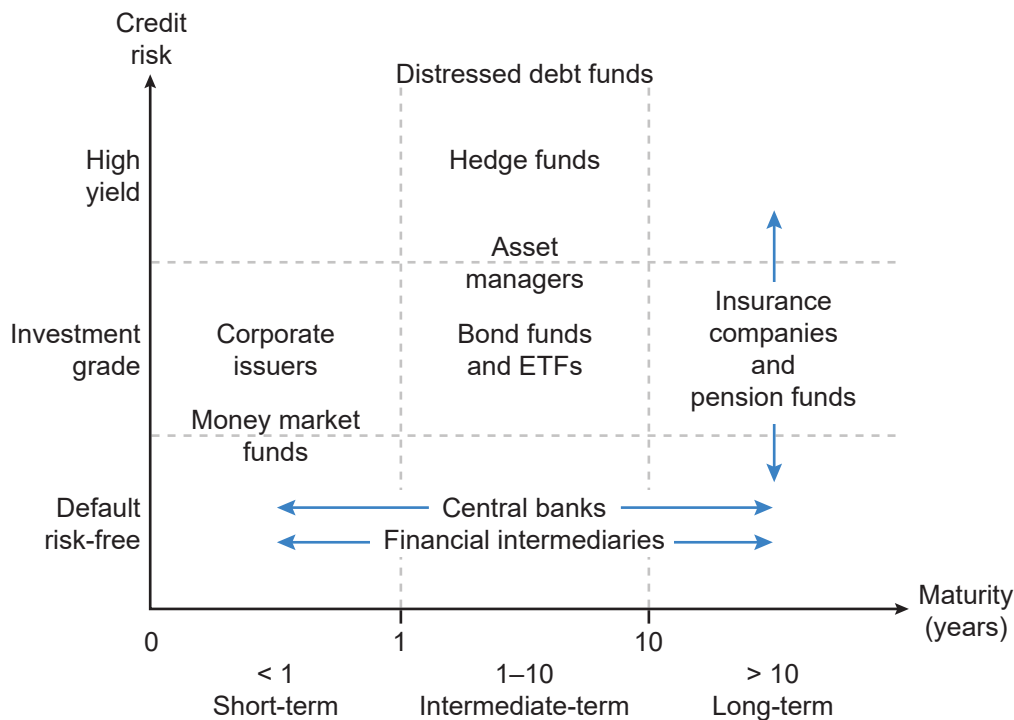


In evaluating the risks of fixed-income instruments, the time remaining to maturity is typically the more pertinent measure due to the connection of interest rate risk and credit risk with the remaining (rather than original) time over which a bond's cash flows are payable.

Most institutional fixed-income investors have portfolios heavily concentrated in particular ranges of the credit risk and maturity spectrums. Those concentrations are driven by the specific investment objectives (eg, funding future liabilities, maximizing returns within a given risk constraint) for a given type of investor.

Exhibit 3 provides an overview of the locations on the credit and maturity spectrums at which different types of investors typically concentrate the majority of their fixed-income holdings:

Exhibit 3 Fixed-income investors vs. credit risk and maturity spectrums



Central banks are often major participants in their domestic fixed-income market. They purchase and sell domestic sovereign debt to conduct open market operations when implementing monetary policy.

Insurance companies and pension funds invest significant portions of their assets in fixed-income instruments to match future liabilities.

Certain types of institutional investors (eg, asset managers, hedge funds) have higher levels of risk tolerance. Many of these investors will opportunistically take on more credit risk exposure in pursuit of higher returns.

Fixed-Income Indexes



LOS: Describe types of fixed-income indexes.

As with equity indexes, there are two broad purposes served by fixed-income indexes: (1) to track performance (ie, risk and return) of particular sectors of the fixed-income market (eg, investment-grade or emerging markets) or an overall market (eg, single country or global) and (2) to serve as a benchmark for evaluating the performance of fixed-income portfolios. Constructing indexes for fixed-income markets can be more challenging than for equity markets due to three factors:

- **Number of securities outstanding:** Since single issuers often have multiple debt issues outstanding, any index that includes all qualifying securities (eg, maturities and par amounts greater than a specified minimum) will contain a large number of issues. Some fixed-income indexes contain well over 10,000 debt issues.

- Turnover of index composition: Due to finite maturities and new issues, the composition of fixed-income indexes changes more frequently than that of equity indexes. Bond indexes are typically rebalanced at the end of each month.
- Weights of index constituents: Usually weighted by the market value of each debt issue. This ensures that broad-based indexes reflect changes in the composition of bond markets over time. Due to the amount of their debt issuance, government debt often has a significant weighting in broad indexes.

Since many bond indexes contain such large numbers of issues, bond index funds cannot hold all the securities in a broad-based index. Bond index funds try to replicate the performance of an index by holding a representative sample of the index's constituent securities.

Fixed-income indexes are classified as:

- aggregate indexes, which contain many issues including either numerous or all qualifying issues in the specified market (eg, country, global), or
- narrow indexes, which are based on a specified sector (eg, credit quality, maturity, geographic region) or investing style (eg, ESG).

To illustrate some of the issues discussed above, Exhibit 4 contains a table comparing three indexes, based on summaries of the indexes' inclusion criteria:

- Bloomberg Barclays Global Aggregate Index (Global)
- J.P. Morgan Emerging Market Bond Index Plus (EMBI+)
- Bloomberg Barclays MSCI Euro Corporate Sustainable SRI Index (ESG)

Exhibit 4 Comparison of fixed-income indexes based on inclusion criteria

Index	Global	EMBI+	ESG
Issuers	Global government, corporate and securitized debt	Emerging-market sovereign USD debt	Corporates: industrial, utility, and financial
Currencies	20 eligible currencies	USD	EUR
Credit quality	Investment grade	≤ Baa1/BBB+	Investment grade
Coupon	Fixed rate, zero coupon, and step-up coupon		
Size	Minimum varies by currency	≥ USD 500 million	≥ EUR 300 million
Maturity	≥ 1 year	≥ 2.5 years for inclusion, excluded at < 12 months	≥ 1 year
Rebalancing	End of each month	Final US business day each month	
Reinvestment	End of month	Immediately	Next rebalancing date

Primary and Secondary Fixed-Income Markets



LOS: Compare primary and secondary fixed-income markets to equity markets.

Primary Fixed-Income Markets

As with equity markets, fixed-income market segments can be classified by their transactions:

- The **primary market** is for issuers raising capital.
- The **secondary market** is for investors trading outstanding securities.

Several different mechanisms are used in primary bond market issuance, which may entail a sale through financial intermediaries or directly from the issuer to investors. Primary market distributions are either:

- public offerings, where any institutional or individual investor may purchase securities, or
- private placements, where a security is sold to a single investor or a select group of investors.

Public offerings of most corporate debt, asset securitizations, and emerging-market government debt sold outside of its domestic market are sold through financial intermediaries, referred to as underwriters, whose specific role often varies depending on the nature of the issuer and the securities being sold.

Debut bond issues, analogous to an equity IPO, are the first public debt offering by a:

- new business entity created by a spin-off, acquisition, or merger,
- corporation beyond the development stage and generating predictable cash flows that decides to add debt financing to its capital structure, or
- sovereign government raising external debt in a foreign currency new to its issued bonds.

Bringing debut issues to market is often a more involved process compared with additional offerings by issuers with debt securities already outstanding. **Debut issuers** must often go through a registration process in the Eurobond or domestic market. Underwriters will typically do presentations (ie, roadshows) and provide information through other means to educate potential investors about the debut issuer, the intended use of the offering proceeds, and the source(s) of funds to repay the debt.

Additional offerings of unsecured investment-grade bonds by repeat issuers usually entail a much shorter and simpler process. The entire process often takes only hours or a few days. One or several (ie, a **syndicate** of) underwriters negotiate a price with the issuer and guarantee the sale of the entire offering at that price. The bond's indenture is usually similar to the indentures of that issuer's previous bond offerings, so institutional fixed-income investors are usually very familiar with the indenture provisions and the issuer's financial statements.

This streamlined process allows issuers to quickly bring new bonds to the market to take advantage of attractive financing opportunities as they arise. In markets that require registration for repeat issuers, the regulatory burdens may be lightened by a shelf registration, a filing in which an issuer indicates the general characteristics of future debt issues it intends to bring to market.

The underwriters maintain an order book to track buy orders from institutional investors to monitor demand for bonds relative to the size of the offering. This record is used to allocate the available securities if demand exceeds supply. The underwriters buy any bonds not acquired by investors at the guaranteed price agreed upon with the issuer.

In most instances, each new bond issue is a different security (eg, different maturity and coupon rate) than an issuer's already outstanding debt. This is unlike additional offerings of equity securities after a company's IPO. In such equity offerings, a company is usually selling more of the same security. Although not as common as the debt issuance process described above, occasionally issuers will sell more of an already outstanding issue (ie, same coupon rate and maturity date, under the same indenture), which is referred to as a **reopening** the existing bond issue.

Offerings of secured high-yield debt and issues by special purpose entities are a more involved process. The indentures are typically more complex and can vary greatly across different issues. These contractual issues, as well as factors relating to the source and allocation of cash flows and information regarding the pledged asset or collateral pool, make such debt issues more difficult to evaluate.

Due to the greater risk related to selling these offerings to investors, underwriters are often unwilling to guarantee the sale of such issues. In this case, underwriters are only willing to act as a broker, taking a commission on the securities they sell, but having no responsibility to buy any unsold securities. This is referred to as a best-efforts offering.

Securities of corporations and special purpose entities may also be issued through private placements. These are typically smaller-sized offerings made to one or a small number of investors. The terms of the deal are often negotiated between the issuer and investor(s). Private placements are unregistered, and there is no underwriter placing the securities with investors.

Domestic issuance of sovereign debt issues is usually completed through a public auction. These offerings are described in a later module.

Secondary Fixed-Income Markets

Most secondary trading of fixed-income securities takes place over the counter (OTC), which is a quote-driven market, though some trading takes place on exchanges or on electronic platforms (eg, Tradeweb). The major participants in this market are institutional investors, financial intermediaries, and central banks.

Liquidity in this market varies greatly depending on the market segment and even among different bond issues from the same issuer. The quote spread—the difference between the price at which a dealer is willing to buy from a customer (bid) and the price at which a dealer is willing to sell (offer)—is a primary measure of bond liquidity. For fixed-income instruments, the spread is often quoted in basis points.

The most liquid of all fixed-income securities are typically the on-the-run (ie, most recently issued) government securities of a given maturity. Government bond dealers usually have larger inventories of these securities and are making active markets as they work those inventories down. These securities are so liquid that spreads are often only a fraction of a basis point.

Similarly, for highly rated corporations that frequently issue debt, recently issued bonds are typically the most liquid and exhibit tight bid-ask spreads. Underwriters and dealers are likely to have more of these securities in inventory, leading to more active markets and bid-ask spreads of just a few basis points.

Other corporate issues, such as bonds of companies with few issues outstanding or the seasoned (ie, older) bonds of frequent issuers, can be significantly less liquid. Such issues may not trade for days or weeks at a time, resulting in much wider spreads, 10–20 basis points or more. Other things equal, the lower the credit quality of a bond, the lower its liquidity and the wider the bid-ask spread.

One exception to this general rule is when there is a large deterioration of a bond's credit quality, causing it to be classified as **distressed debt**. This classification is given to the debt of issuers that have declared bankruptcy or are viewed as being close to doing so. Distressed debt often trades at large discounts to par based on an expectation that the issuer is unlikely to be able to make all promised interest and principal payments. There is often an increase in trading activity as debt becomes distressed. The increased trading volume results from forced selling by many current holders due to minimum credit rating investment guidelines being violated and distressed debt funds opportunistically swooping in anticipation of equity-like returns.



Learning Module 4

Fixed-Income Markets for Corporate Issuers



LOS: Compare short-term funding alternatives available to corporations and financial institutions.

LOS: Describe repurchase agreements (repos), their uses, and their benefits and risks.

LOS: Contrast the long-term funding of investment grade versus high-yield corporate issuers.

Short-Term Funding Alternatives



LOS: Compare short-term funding alternatives available to corporations and financial institutions.

A common risk mitigation tactic used by businesses is to incur debt obligations with maturities that are generally similar to the lives of the assets being financed. So, at least in broad terms, short-dated debt is often incurred to fund short-term assets and long-term debt is taken on to finance long-lived assets. For example, working capital—the difference between current assets and current liabilities—is used to finance operations (discussed in more detail in Corporate Issuers). Corporations may use other sources of short-term financing as well.

External Loan Financing

Short-term financing for nonfinancial corporations is often obtained through lines of credit arranged with financial intermediaries. Three common types are:

- Uncommitted bank lines of credit
- Committed bank lines of credit
- Revolving credit agreements (revolvers)

Depending on a company's financial condition, general business conditions, and the jurisdiction, these lines of credit may be unsecured or secured.

Lines of Credit

An **uncommitted line of credit** is a loan facility in which a bank offers to lend a company funds up to a specified principal amount for a predetermined maturity. If the company draws on this line of credit, the interest rate will be at a market reference rate (MRR) plus a company-specific spread. Under normal business conditions, uncommitted lines of credit are attractive since they:

- are usually unsecured.
- offer the flexibility of accessing funding as needed.
- are low cost; generally, the only cost is interest expense on any outstanding balance.

However, **uncommitted lines of credit** are the least reliable form of bank borrowing. A bank has the right to refuse to lend funds when a company requests to draw on an uncommitted credit line. A refusal may be based on company-specific factors or general business conditions. Bank refusals to honor a request for credit on an uncommitted line are most likely to occur when alternative sources of funds are hard to find or have become more expensive.

A **committed, or regular, line of credit** is a formal written agreement that gives a company the right to obtain funds from a bank. This makes committed lines of credit a more reliable source of funds than uncommitted lines. For larger borrowers, a group of banks sometimes forms a syndicate: Each member agrees to provide a predetermined percentage of each drawdown on the credit line. Corporate borrowings on committed lines are normally classified as notes payable (or the equivalent). Undrawn portions of committed lines sometimes serve as backup credit on commercial paper or other types of financing.

Like uncommitted lines, committed lines are usually unsecured and are prepayable without penalty. However, committed lines are more expensive since, in addition to interest (MRR plus spread) on the outstanding balance, there is usually an upfront commitment fee. This fee may be on either the full portion or undrawn portion of the credit line for the commitment period.

A **revolving credit agreement** (ie, revolver, or operating line of credit) is the most reliable form of short-term bank funding for businesses. Revolvers have commitment fees and borrowing rates similar to those of committed lines of credit, but they are typically multi-year agreements and usually include restrictions.

Secured Loans and Factoring

With **secured loans**, also known as asset-based loans, the borrower pledges specific assets as collateral on the loan. The lender obtains a security interest in (ie, right to take possession of) the pledged asset if the loan is not repaid. Assets pledged as collateral include owned fixed assets, high-quality receivables, inventory, or marketable securities.

Companies may also sell accounts receivable to a lender under a **factoring arrangement**. The lender (ie, factor) then owns the receivables and is responsible for their management (eg, collections, extending payment dates). Thus, the factor assumes the risks (eg, defaults) and reaps the benefits (eg, cash collections). The cost of this type of credit is the discount to the amount owed on the receivables, which is usually substantial. Though factoring is more common for receivables, inventory may also be factored.

External, Security-Based Financing

Companies with the ability to issue debt in the public markets can usually obtain financing at lower interest rates than those from traditional lenders. Large, highly rated corporations often find that issuing **commercial paper** (CP) through public offerings or private placements is an attractive financing alternative. CP is short-term (ie, usually less than three months) unsecured debt. Due to the ease of issuance, CP is a flexible cash management tool; its typical uses include funding working capital needs, managing seasonal variations in operating cash flows, and **bridge financing** (ie, initial funding of long-lived asset purchases until long-term funding is in place).

To maintain their presence in this market, most borrowers roll over their CP as it matures rather than retiring it; thus, more CP is issued to pay off the maturing paper. Refunding CP in this fashion may not be possible if there is a serious deterioration in either the issuer's financial condition or general business conditions. This **rollover risk** is usually offset since investors require the issuer to have a backup line of credit, typically in the form of an unused portion of a committed line of credit from a bank.

Short-Term Funding Alternatives for Financial Institutions

Banks obtain a significant portion of their funding from short-dated liabilities (eg, deposits). In most interest rate environments, the banks' net interest margin (ie, Interest income – Interest expense) is enhanced as they make long-term loans at higher interest rates. However, they must also be able to meet depositors' demands for withdrawals. Therefore, banks typically hold a portion of their assets as short-term liquid instruments.