

CHAPTER 1

Overview of Financial Instruments and Financial Markets

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Abstract: Broadly speaking, an asset is any possession that has value in an exchange. Assets can be classified as tangible or intangible. A tangible asset is one whose value depends on particular physical properties—examples are buildings, land, and machinery. Assets, by contrast, represent legal claims to some future benefit. Their value bears no relation to the form, physical or otherwise, in which these claims are recorded. Financial assets, also referred to as financial instruments, are intangible assets. For financial assets, the typical benefit or value is a claim to future cash. Financial markets are classified as cash/spot markets and derivatives markets. Financial markets play a key role in the financial system of all economies. In most economies financial instruments are created and subsequently traded in some type of financial market.

Keywords: financial assets, financial instruments, issuer, investor, debt instrument, equity instrument, fixed income instruments, maturity, coupon rate, floating-rate securities, amortizing instrument, call provision, put provision, prepayment, search costs, liquidity, price discovery process, capital market, secondary market, primary market, over-the-counter market, derivatives markets, derivative instruments, futures contract, option contract

Participants in financial markets must understand the wide range of financial instruments and the role of financial markets. In this chapter, an overview of the instruments (both cash and derivative instruments), issuers, and investors is provided. The role of financial assets and financial markets are also explained.

ISSUERS AND INVESTORS

The entity that has agreed to make future cash payments is called the *issuer* of the financial instrument; the owner

of the financial instrument is referred to as the *investor*. Here are seven examples of financial instruments:

1. A loan by Bank of America (investor/commercial bank) to an individual (issuer/borrower) to purchase a car.
2. A bond issued by the U.S. Department of the Treasury.
3. A bond issued by Nike Inc.
4. A bond issued by the city of San Francisco.
5. A bond issued by the government of Australia.
6. A share of common stock issued by Caterpillar, Inc., an American company.
7. A share of common stock issued by Toyota Motor Corporation, a Japanese company.

In the case of the car loan by Bank of America, the terms of the loan establish that the borrower must make specified payments to the commercial bank over time. The payments include repayment of the amount borrowed plus interest. The cash flow for this asset is made up of the specified payments that the borrower must make.

In the case of a U.S. Treasury bond, the U.S. government (the issuer) agrees to pay the holder or the investor the interest payments every six months until the bond matures, then at the maturity date repay the amount borrowed. The same is true for the bonds issued by Nike Inc., the city of San Francisco, and the government of Australia. In the case of Nike, Inc. the issuer is a corporation, not a government entity. In the case of the city of San Francisco, the issuer is a municipal government. The issuer of the Australian government bond is a central government.

The common stock of Caterpillar, Inc. entitles the investor to receive dividends distributed by the company. The investor in this case also has a claim to a pro rata share of the net asset value of the company in case of liquidation of the company. The same is true of the common stock of Toyota Motor Corporation.

DEBT VERSUS EQUITY INSTRUMENTS

Financial instruments can be classified by the type of claim that the holder has on the issuer. When the contractual arrangement is one in which the issuer agrees to pay interest and repay the amount borrowed, the financial instrument is said to be a *debt instrument*. The car loan, the U.S. Treasury bond, the Nike Inc. bond, the city of San Francisco bond, and the Australian government bond are examples of debt instruments requiring fixed payments.

In contrast to a debt obligation, an *equity instrument* obligates the issuer of the financial instrument to pay the holder an amount based on earnings, if any, after the holders of debt instruments have been paid. Common stock is an example of an equity claim. A partnership share in a business is another example.

Some securities fall into both categories in terms of their attributes. Preferred stock, for example, is an equity instrument that entitles the investor to receive a fixed amount. This payment is contingent, however, and due only after payments to debt instrument holders are made. Another "combination" instrument is a convertible bond, which allows the investor to convert debt into equity under certain circumstances. Both debt instruments and preferred stock are called *fixed-income instruments*.

CHARACTERISTICS OF DEBT INSTRUMENTS

There are a good number of debt instruments available to investors. Debt instruments include loans, money market instruments, bonds, mortgage-backed securities, and asset-backed securities. In the chapters that follow, each

will be described. There are features of debt instruments that are common to all debt instruments and they are described below. In later chapters, there will be a further discussion of these features as they pertain to debt instruments of particular issuers.

Maturity

The term to maturity of a debt obligation is the number of years over which the issuer has promised to meet the conditions of the obligation. At the maturity date, the issuer will pay off any amount of the debt obligation outstanding. The convention is to refer to the "term to maturity" as simply its "maturity" or "term." As we explain later, there may be provisions that allow either the issuer or holder of the debt instrument to alter the term to maturity.

The market for debt instruments is classified in terms of the time remaining to its maturity. A money market instrument is a debt instrument which has one year or less remaining to maturity. Debt instruments with a maturity greater than one year are referred to as a capital market debt instrument.

Par Value

The par value of a bond is the amount that the issuer agrees to repay the holder of the debt instrument by the maturity date. This amount is also referred to as the principal, face value, or maturity value. Bonds can have any par value.

Because debt instruments can have a different par value, the practice is to quote the price of a debt instrument as a percentage of its par value. A value of 100 means 100% of par value. So, for example, if a debt instrument has a par value of \$1,000 and is selling for \$900, it would be said to be selling at 90. If a debt instrument with a par value of \$5,000 is selling for \$5,500, it is said to be selling for 110.

Coupon Rate

The *coupon rate*, also called the nominal rate or the contract rate, is the interest rate that the issuer/borrower agrees to pay each year. The dollar amount of the payment, referred to as the coupon interest payment or simply *interest payment*, is determined by multiplying the coupon rate by the par value of the debt instrument. For example, the interest payment for a debt instrument with a 7% coupon rate and a par value of \$1,000 is \$70 (7% times \$1,000).

The frequency of interest payments varies by the type of debt instrument. In the United States, the usual practice for bonds is for the issuer to pay the coupon interest in two semiannual installments. Mortgage-backed securities and asset-backed securities typically pay interest monthly. For bonds issued in some markets outside the United States, coupon payments are made only once per year. Loan interest payments can be customized in any manner.

Zero-Coupon Bonds

Not all debt obligations make periodic coupon interest payments. Debt instruments that are not contracted to make periodic coupon payments are called zero-coupon

instruments. The holder of a zero-coupon instrument realizes interest income by buying it substantially below its par value. Interest then is paid at the maturity date, with the interest earned by the investor being the difference between the par value and the price paid for the debt instrument. So, for example, if an investor purchases a zero-coupon instrument for 70, the interest realized at the maturity date is 30. This is the difference between the par value (100) and the price paid (70).

There are bonds that are issued as zero-coupon instruments. Moreover, in the money market there are several types of debt instruments that are issued as discount instruments.

There is another type of debt obligation that does not pay interest until the maturity date. This type has contractual coupon payments, but those payments are accrued and distributed along with the maturity value at the maturity date. These instruments are called accrued coupon instruments or accrual securities or compound interest securities.

Floating-Rate Securities

The coupon rate on a debt instrument need not be fixed over its life. *Floating-rate securities*, sometimes called floaters or variable-rate securities, have coupon payments that reset periodically according to some reference rate. The typical formula for the coupon rate on the dates when the coupon rate is reset is:

$$\text{Reference rate} \pm \text{Quoted margin}$$

The quoted margin is the additional amount that the issuer agrees to pay above the reference rate (if the quoted margin is positive) or the amount less than the reference rate (if the quoted margin is negative). The quoted margin is expressed in terms of basis points. A basis point is equal to 0.0001 or 0.01%. Thus, 100 basis points are equal to 1%.

To illustrate a coupon reset formula, suppose that the reference rate is the 1-month London Interbank Offered Rate (LIBOR). Suppose that the quoted margin is 150 basis points. Then the coupon reset formula is:

$$1\text{-month LIBOR} + 150 \text{ basis points}$$

So, if 1-month LIBOR on the coupon reset date is 5.5%, the coupon rate is reset for that period at 7% (5% plus 150 basis points).

The reference rate for most floating-rate securities is an interest rate or an interest rate index. There are some issues where this is not the case. Instead, the reference rate is the rate of return on some financial index such as one of the stock market indexes. There are debt obligations whose coupon reset formula is tied to an inflation index.

Typically, the coupon reset formula on floating-rate securities is such that the coupon rate increases when the reference rate increases, and decreases when the reference rate decreases. There are issues whose coupon rate moves in the opposite direction from the change in the reference rate. Such issues are called inverse floaters or reverse floaters.

A floating-rate debt instrument may have a restriction on the maximum coupon rate that will be paid at a reset date. The maximum coupon rate is called a cap.

Because a cap restricts the coupon rate from increasing, a cap is an unattractive feature for the investor. In contrast, there could be a minimum coupon rate specified for a floating-rate security. The minimum coupon rate is called a floor. If the coupon reset formula produces a coupon rate that is below the floor, the floor is paid instead. Thus, a floor is an attractive feature for the investor.

Provisions for Paying off Debt Instruments

The issuer/borrower of a debt instrument agrees to repay the principal by the stated maturity date. The issuer/borrower can agree to repay the entire amount borrowed in one lump sum payment at the maturity date. That is, the issuer/borrower is not required to make any principal repayments prior to the maturity date. Such bonds are said to have a bullet maturity. An issuer may be required to retire a specified portion of an issue each year. This is referred to as a sinking fund requirement.

There are loans that have a schedule of principal repayments that are made prior to the final maturity of the instrument. Such debt instruments are said to be amortizing instruments. The same is true for mortgage-backed and most asset-backed securities because they are backed by pools of loans.

There are debt instruments that have a call provision. This provision grants the issuer/borrower an option to retire all or part of the issue prior to the stated maturity date. Some issues specify that the issuer must retire a predetermined amount of the issue periodically. Various types of call provisions are discussed below.

Call and Refunding Provisions

A borrower generally wants the right to retire a debt instrument prior to the stated maturity date because it recognizes that at some time in the future the general level of interest rates may fall sufficiently below the coupon rate so that redeeming the issue and replacing it with another debt instrument with a lower coupon rate would be economically beneficial. This right is a disadvantage to the investor since proceeds received must be reinvested at a lower interest rate. As a result, a borrower who wants to include this right as part of a debt instrument must compensate the investor when the issue is sold by offering a higher coupon rate.

The right of the borrower to retire the issue prior to the stated maturity date is referred to as a "call option." If the borrower exercises this right, the issuer is said to "call" the debt instrument. The price that the borrower must pay to retire the issue is referred to as the call price.

Prepayments

For amortizing instruments—such as loans and securities that are backed by loans—there is a schedule of principal repayments but individual borrowers typically have the

option to pay off all or part of their loan prior to the scheduled date. Any principal repayment prior to the scheduled date is called a prepayment. The right of borrowers to prepay is called the prepayment option. Basically, the prepayment option is the same as a call option.

Options Granted to Bondholders

There are provisions in debt instruments that give either the investor and/or the issuer an option to take some action against the other party. The most common type of embedded option is a call feature, which was discussed earlier. This option is granted to the issuer. There are two options that can be granted to the owner of the debt instrument: the right to put the issue and the right to convert the issue.

A debt instrument with a put provision grants the investor the right to sell the issue back to the issuer at a specified price on designated dates. The specified price is called the put price. The advantage of the put provision to the investor is that if after the issuance date of the debt instrument market interest rates rise above the debt instrument's coupon rate, the investor can force the borrower to redeem the bond at the put price and then reinvest the proceeds at the prevailing higher rate.

A convertible debt instrument is one that grants the investor the right to convert or exchange the debt instrument for a specified number of shares of common stock. Such a feature allows the investor to take advantage of favorable movements in the price of the borrower's common stock or equity and is referred to as a *conversion provision*.

FINANCIAL MARKETS

A financial market is a market where financial instruments are exchanged (that is, traded). Although the existence of a financial market is not a necessary condition for the creation and exchange of a financial instrument, in most economies financial instruments are created and subsequently traded in some type of financial market. The market in which a financial asset trades for immediate delivery is called the spot market or cash market. The other type of financial market is called a derivatives market.

Role of Financial Markets

Financial markets provide three major economic functions. First, the interactions of buyers and sellers in a financial market determine the price of the traded asset. Or, equivalently, they determine the required return on a financial instrument. Because the inducement for firms to acquire funds depends on the required return that investors demand, it is this feature of financial markets that signals how the funds in the financial market should be allocated among financial instruments. This is called the price discovery process.

Second, financial markets provide a mechanism for an investor to sell a financial instrument. Because of this feature, it is said that a financial market offers "liquidity,"

an attractive feature when circumstances either force or motivate an investor to sell. If there were not liquidity, the owner would be forced to hold a financial instrument until the issuer initially contracted to make the final payment (that is, until the debt instrument matures) and an equity instrument until the company is either voluntarily or involuntarily liquidated. While all financial markets provide some form of liquidity, the degree of liquidity is one of the factors that characterize different markets.

The third economic function of a financial market is that it reduces the cost of transacting. There are two costs associated with transacting: search costs and information costs. *Search costs* represent explicit costs, such as the money spent to advertise one's intention to sell or purchase a financial instrument, and implicit costs, such as the value of time spent in locating a counterparty. The presence of some form of organized financial market reduces search costs. Information costs are costs associated with assessing the investment merits of a financial instrument, that is, the amount and the likelihood of the cash flow expected to be generated. In a price efficient market, prices reflect the aggregate information collected by all market participants.

Classification of Financial Markets

There are many ways to classify financial markets. One way is by the type of financial claim, such as debt markets and equity markets. Another is by the maturity of the claim. For example, the money market is a financial market for short-term debt instruments; the market for debt instruments with a maturity greater than one year and equity instruments is called the capital market.

Financial markets can be categorized as those dealing with financial claims that are newly issued, called the *primary market*, and those for exchanging financial claims previously issued, called the *secondary market* or the market for seasoned instruments.

Markets are classified as either cash markets or *derivative markets*. The latter is described later in this chapter. A market can be classified by its organizational structure: It may be an auction market or an *over-the-counter market*.

DERIVATIVE MARKETS

So far we have focused on the cash market for financial instruments. With some financial instruments, the contract holder has either the obligation or the choice to buy or sell a financial instrument at some future time. The price of any such contract derives its value from the value of the underlying financial instrument, financial index, or interest rate. Consequently, these contracts are called *derivative instruments*.

The primary role of derivative instruments is to provide an inexpensive way of protecting against various types of risk encountered by investors and issuers. Unfortunately, derivative instruments are too often viewed by the general public—and sometimes regulators and legislative bodies—as vehicles for pure speculation (that is, legalized

gambling). Without derivative instruments and the markets in which they trade, the financial systems throughout the world would not be as efficient or integrated as they are today.

A May 1994 report published by the U.S. General Accounting Office (GAO) titled *Financial Derivatives: Actions Needed to Protect the Financial System* recognized the importance of derivatives for market participants. Page 6 of the report states:

Derivatives serve an important function of the global financial marketplace, providing end-users with opportunities to better manage financial risks associated with their business transactions. The rapid growth and increasing complexity of derivatives reflect both the increased demand from end-users for better ways to manage their financial risks and the innovative capacity of the financial services industry to respond to market demands.

Types of Derivative Instruments

The two basic types of derivative instruments are futures/forward contracts and options contracts. A *futures contract* or forward contract is an agreement whereby two parties agree to transact with respect to some financial instrument at a predetermined price at a specified future date. One party agrees to buy the financial instrument; the other agrees to sell the financial instrument. Both parties are obligated to perform, and neither party charges a fee.

An *option contract* gives the owner of the contract the right, but not the obligation, to buy (or sell) a financial instrument at a specified price from (or to) another party. The buyer of the contract must pay the seller a fee, which is called the option price. When the option grants the owner of the option the right to buy a financial instrument from the other party, the option is called a call option. If, instead, the option grants the owner of the option the right to sell a financial instrument to the other party, the option is called a put option.

Derivative instruments are not limited to financial instruments. In this handbook we will describe derivative instruments where the underlying asset is a financial asset, or some financial benchmark such as a stock index or an interest rate, or a credit spread. Moreover, there are other types of derivative instruments that are basically "packages" of either forward contracts or option contracts. These include swaps, caps, and floors.

SUMMARY

Financial instruments can be classified by the type of claim that the holder has on the issuer (debt and equity) and cash and derivative instruments. With debt instruments there is an interest rate that is specified by contract. It could be a fixed interest rate or a floating interest rate. Other

characteristics of debt instruments are that they have a maturity value and provisions for paying off the principal borrowed. Some debt instruments may have call, put or conversion provisions. An equity instrument obligates the issuer of the financial instrument to pay the holder an amount based on earnings, if any, after the holders of debt instruments have been paid.

Financial markets provide three major economic functions: (1) the determination of the price of the traded asset (price discovery); (2) a mechanism for an investor to sell a financial instrument (liquidity); and (3) reduction in the cost of transacting (search cost and information costs).

Financial markets are classified as cash (spot) markets and derivative markets. Derivative instruments include future/forwards contracts and options. The primary role of derivative instruments is to provide investors and issuers a vehicle for hedging/controlling different types of risk that they encounter when operating in the financial market.

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