

# Introduction to Finance

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**MGM 237**

**Valuation of Bonds, Stocks, and Firm Value**

**Lecture 6**



Chapter

6

## Valuation of Bonds, Stocks, and Firm Value

### Learning Outcomes

**Students will be able to:**

- Explain what value means in finance.
- Value bonds using coupon and principal cash flows.
- Value common and preferred stocks using dividends and required return.
- Connect security valuation to total firm value.

## Link with Time Value of Money

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Valuation uses the same TVM logic: future cash flows are converted into today's value.
- 02 Bonds, stocks, and firms are valued by discounting expected cash flows.
- 03 The required return is the discount rate investors demand for time and risk.
- 04 Higher required return → lower present value, holding cash flows constant.

**Future cash flows**  
Coupons, dividends,  
or free cash flows

**Required return**  
Compensation  
for time and risk

**Present value**  
Estimated value  
today

### Manager's Insight

Valuation is simply time value of money applied to real securities.



### Quick Example

If you expect \$1,100 one year from now and require 10%, today's value is  $\$1,100 \div 1.10 = \$1,000$ .

## What Is Valuation?

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Valuation means estimating what an asset is worth today.
- 02 It depends on expected cash flows, timing, and risk.
- 03 The formula idea is: Value today = present value of expected future benefits.
- 04 In finance, value is not a guess; it is a structured calculation.



### Manager's Insight

A strong valuation explains both the number and the assumptions behind it.



### Quick Example

If future cash flows improve or risk declines, the estimated value usually rises.

## Value versus Price

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Value is what an asset should be worth based on cash flows and risk.
- 02 Price is what buyers and sellers actually agree to in the market.
- 03 Value and price can differ because investors use different expectations.
- 04 Investment decisions often compare estimated value with market price.

#### Value

Estimated worth based on cash flows and risk

#### Price

Amount paid in the market today

#### Decision

Compare value with price before buying or selling

### Manager's Insight

A security may be attractive when estimated value is higher than market price.



### Quick Example

Estimated value = \$50, market price = \$44. The asset may appear undervalued under your assumptions.

# Intrinsic Value

Valuation links cash flows, required return, and firm value.

## Core explanation

- 01 Intrinsic value is the estimated true economic value of an asset.
- 02 It is based on expected cash flows and required return.
- 03 It may differ from the current market price.
- 04 Analysts estimate intrinsic value to identify mispriced assets.

## Basic valuation idea

**Intrinsic Value = PV of expected cash flows**

## Manager's Insight

Intrinsic value is useful only if the assumptions are reasonable.



## Quick Example

If expected dividends are too optimistic, the calculated intrinsic value will be too high.

## Market Value

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Market value is the current value observed in financial markets.
- 02 For a traded stock, it is usually the share price multiplied by shares outstanding.
- 03 Market value reflects investor expectations at a point in time.
- 04 It changes as new information arrives.

### Market value of common equity

$$\text{Market Equity Value} = \text{Share Price} \times \text{Shares Outstanding}$$

### Manager's Insight

Market value is important because investors and lenders observe it directly.



### Quick Example

If a company has 10 million shares and the share price is \$20, market equity value is \$200 million.

## Book Value

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Book value comes from the accounting records.
- 02 It is based on historical cost and accounting rules.
- 03 Book value is not always equal to market value.
- 04 Book value is useful, but valuation decisions usually require market-based thinking.

| Measure         | Source             | Typical use         |
|-----------------|--------------------|---------------------|
| Book value      | Accounting records | Financial reporting |
| Market value    | Financial market   | Investor decisions  |
| Intrinsic value | Analyst estimate   | Buy/sell decision   |

### Manager's Insight

Book value helps describe the balance sheet, but market decisions require cash-flow value.



### Quick Example

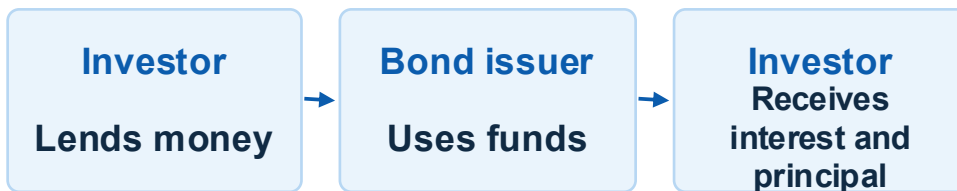
A machine may have book value of \$30,000 but market value of only \$18,000 if it is old or less useful.

## Bond Definition

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A bond is a long-term debt security.
- 02 The issuer borrows money from investors.
- 03 The issuer promises periodic interest payments and repayment of principal.
- 04 The investor is a lender, not an owner.



### Manager's Insight

Bonds are a major source of long-term financing for companies and governments.



### Quick Example

A company issues a 5-year bond to raise funds for a factory expansion.

## Key Bond Characteristics

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 **Par value:** the amount repaid at maturity.
- 02 **Coupon rate:** the stated annual interest rate.
- 03 **Maturity date:** when principal is repaid.
- 04 **Yield to maturity:** the return investors require in the market.

#### Par value

Principal amount

#### Coupon

Interest payment

#### Maturity

Final repayment date

### Manager's Insight

These four terms are the foundation of bond valuation.



### Quick Example

A 6% coupon bond with \$1,000 par value pays \$60 interest per year if coupons are annual.

## Par Value

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Par value is the face value of the bond.
- 02 It is the amount the issuer repays at maturity.
- 03 Many corporate bonds have par value of \$1,000.
- 04 Par value is used to calculate coupon payments.

### Coupon calculation

$$\text{Annual Coupon} = \text{Par Value} \times \text{Coupon Rate}$$

### Manager's Insight

Par value is not always the same as current bond price.



### Quick Example

A bond with \$1,000 par value may trade at \$950, \$1,000, or \$1,080 depending on market rates.

## Coupon Rate

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 The coupon rate is the stated interest rate on the bond.
- 02 It is usually applied to the par value.
- 03 Coupon payments may be annual or semiannual.
- 04 The coupon rate does not automatically change when market rates change.

### Simple example

$$\text{Coupon Payment} = \$1,000 \times 8\% = \$80$$

### Manager's Insight

Coupon rate determines cash paid by the issuer, not necessarily the investor's required return.



### Quick Example

A \$1,000 bond with an 8% annual coupon pays \$80 per year.

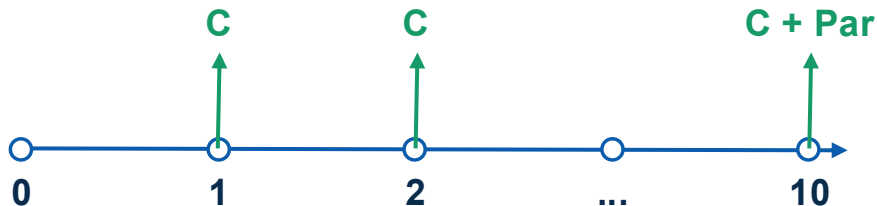
## Maturity Date

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Maturity is the date when the bond principal is repaid.
- 02 Shorter maturity usually means less interest rate risk.
- 03 Longer maturity usually means greater sensitivity to rate changes.
- 04 Maturity helps determine the number of discounting periods.

### Bond cash-flow timeline



### Manager's Insight

Managers choose maturity to match financing needs and risk tolerance.



### Quick Example

A 10-year bond locks in financing for longer than a 3-year bond but may require a higher yield.

## Yield to Maturity

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Yield to maturity is the market-required return on a bond.
- 02 It is the discount rate used to value the bond cash flows.
- 03 YTM depends on market interest rates and bond risk.
- 04 If YTM changes, the bond price changes.

### Key idea

Bond value is calculated using YTM as the discount rate.

### Manager's Insight

YTM is the investor's required return, not simply the coupon rate.



### Quick Example

If investors require 9% but the bond coupon is 6%, the bond will normally sell below par.

## Bond Cash Flows

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Bond cash flows usually include periodic coupon payments.
- 02 At maturity, the investor receives the final coupon plus par value.
- 03 Each cash flow must be discounted back to today.
- 04 The bond price is the sum of these present values.

Example: 3-year, \$1,000 par, 8% coupon



### Manager's Insight

Bond valuation is easier when students draw the cash-flow timeline first.



### Quick Example

For a 3-year bond: Year 1 coupon, Year 2 coupon, Year 3 coupon plus par value.

## Bond Valuation Principle

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A bond promises two types of cash flows: coupon payments and par value at maturity.
- 02 The bond price is the present value of both parts.
- 03 Use the market required return or YTM as the discount rate.
- 04 Simple rule: bond value = PV of coupons + PV of principal.

PV of coupons  
Interest payments



PV of par  
Principal repayment



Bond price  
Total present value

### Manager's Insight

The coupon rate creates the cash flow; the YTM discounts the cash flow.



### Quick Example

Example logic: value the \$80 coupons as an annuity, value the \$1,000 par as a single amount, then add them.

## Present Value of Coupons

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Coupons are equal periodic interest payments.
- 02 Because they are equal, we value them as an ordinary annuity.
- 03  $C$  = coupon payment per period.
- 04  $r$  = YTM per period;  $n$  = number of coupon payments.

### Coupon annuity formula

$$\text{PV of Coupons} = C \times [1 - 1/(1+r)^n] / r$$

### Manager's Insight

Coupon payments are valued separately because they arrive before maturity.



### Quick Example

Solved:  $C = \$80$ ,  $r = 10\%$ ,  $n = 5$ .  
 Annuity factor = 3.7908 → PV coupons =  
 $80 \times 3.7908 = \$303.26$ .

## Present Value of Principal

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Par value is the amount repaid at maturity.
- 02 It is one future payment, so we discount it as a single future amount.
- 03 Par = principal repayment;  $r$  = YTM per period.
- 04  $n$  = periods until maturity.

### Single future amount

$$\text{PV of Principal} = \text{Par Value} / (1+r)^n$$

### Manager's Insight

The farther away the maturity date, the smaller the present value of par.



### Quick Example

Solved: Par = \$1,000,  $r$  = 10%,  $n$  = 5.  
 PV principal =  $1,000 \div (1.10)^5 = \$620.92$ .

## Bond Price Formula

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Bond price combines the annuity value of coupons and the PV of par.
- 02 Do not discount with the coupon rate unless it equals the market required return.
- 03 For semiannual coupons: divide annual YTM by 2 and multiply years by 2.
- 04 Final answer shows whether the bond is premium, discount, or par.

### Complete bond formula

$$\text{Bond Price} = C \times [1 - 1/(1+r)^n] / r + \text{Par}/(1+r)^n$$

### Manager's Insight

Bond valuation is Chapter 9 time value of money applied to Chapter 10 bonds.



### Quick Example

Solved: PV coupons = \$303.26 and PV principal = \$620.92.  
Bond price = 303.26 + 620.92 = \$924.18.

## Premium Bonds

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A premium bond sells above par value.
- 02 This usually happens when coupon rate is greater than market required return.
- 03 Investors are willing to pay more because the coupon is attractive.
- 04 The price moves toward par as maturity approaches, assuming no other changes.

### Premium condition

**Coupon Rate > YTM → Price > Par**

### Manager's Insight

Premium does not mean the bond is risk-free; it describes price relative to par.



### Quick Example

Coupon rate = 9%, YTM = 6%. The bond normally sells above \$1,000.

## Discount Bonds

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A discount bond sells below par value.
- 02 This usually happens when coupon rate is less than market required return.
- 03 Investors pay less because the coupon is not attractive enough.
- 04 The discount compensates investors for the lower coupon.

### Discount condition

$$\text{Coupon Rate} < \text{YTM} \rightarrow \text{Price} < \text{Par}$$

### Manager's Insight

Discount bonds often occur when interest rates rise after the bond was issued.



### Quick Example

Coupon rate = 5%, YTM = 8%. The bond normally sells below \$1,000.

## Par Bonds

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A par bond sells at approximately its par value.
- 02 This happens when coupon rate equals market required return.
- 03 The coupon payment is exactly what investors require for that risk level.
- 04 Par bonds are a useful benchmark for understanding premium and discount bonds.

### Par condition

$$\text{Coupon Rate} = \text{YTM} \rightarrow \text{Price} = \text{Par}$$

### Manager's Insight

Par value is the reference point for classifying bond price behavior.



### Quick Example

Coupon rate = 7%, YTM = 7%. The bond price is approximately \$1,000.

## Relationship between Rates and Bond Prices

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Bond prices and market interest rates move in opposite directions.
- 02 When required return rises, old fixed coupons become less attractive.
- 03 Investors then pay a lower price for the bond.
- 04 When required return falls, old fixed coupons become more attractive.

Rates  $\uparrow$   $\rightarrow$  Bond Price  $\downarrow$   
Rates  $\downarrow$   $\rightarrow$  Bond Price  $\uparrow$

**Bond prices fall**

**Rates fall**

**Bond prices rise**

**Reason**

Discount rate  
changes PV

### Manager's Insight

Interest rate risk is mainly the risk that bond prices fall when rates rise.



### Quick Example

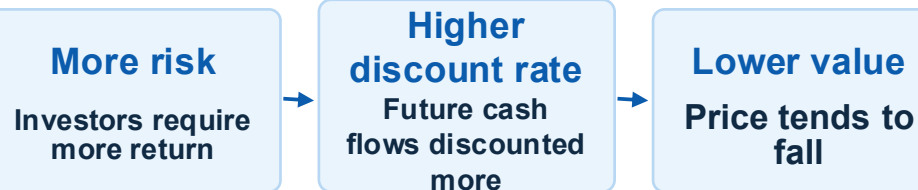
A 6% coupon bond loses value when new bonds offer 8%, because investors can earn more elsewhere.

## Bond Risk Overview

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Bond investors face several risks.
- 02 Two important risks are interest rate risk and default risk.
- 03 Risk affects the required return.
- 04 Higher risk generally means a lower bond price, all else equal.



**Manager's Insight** Risk is not separate from valuation; it enters valuation through the required return.



### Quick Example

A risky corporate bond must offer a higher yield than a safer government bond.

## Interest Rate Risk

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Interest rate risk is the risk that bond prices fall when market rates rise.
- 02 It is higher for longer maturity bonds.
- 03 It is also higher for bonds with lower coupon rates.
- 04 Investors manage it by choosing suitable maturities and duration.

| Bond type      | Rate sensitivity |
|----------------|------------------|
| Short maturity | Lower            |
| Long maturity  | Higher           |
| Low coupon     | Higher           |

### Manager's Insight

A firm issuing debt must understand how interest rate movements affect investors.



### Quick Example

A 20-year bond price usually changes more than a 2-year bond price when rates rise.

## Default Risk

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Default risk is the risk that the issuer cannot make promised payments.
- 02 Stronger issuers normally borrow at lower rates.
- 03 Weaker issuers must offer higher yields to attract investors.
- 04 Credit ratings help investors judge default risk.

**Weak credit**  
Higher default risk

**Higher required yield**  
Risk premium rises

**Lower bond value**  
Price falls

### Manager's Insight

Default risk affects both the cost of borrowing and the market value of debt.



### Quick Example

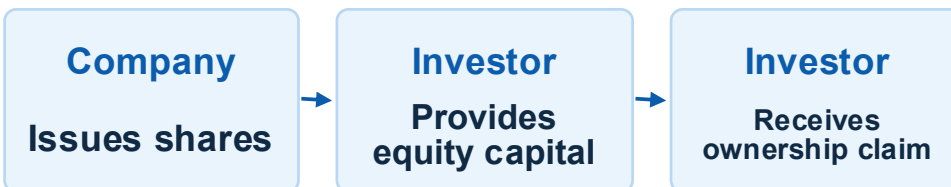
If a company's credit quality worsens, investors require a higher yield and the bond price falls.

## Common Stock Definition

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Common stock represents ownership in a corporation.
- 02 Common shareholders have a residual claim on the firm's value.
- 03 They may receive dividends if the company chooses to pay them.
- 04 Their return depends on dividends and share price changes.



### Manager's Insight

Common stock financing does not require fixed interest payments, but it dilutes ownership.



### Quick Example

If you own common shares, you benefit when the firm grows and the share price increases.

## Stockholder Rights

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Common stockholders usually have voting rights.
- 02 They may elect the board of directors.
- 03 They may receive dividends when declared.
- 04 They have a residual claim after creditors and preferred stockholders.

| Right          | Meaning                          |
|----------------|----------------------------------|
| Vote           | Influence major decisions        |
| Dividend       | Receive payout if declared       |
| Residual claim | Receive value after prior claims |

### Manager's Insight

Ownership rights give shareholders influence but not guaranteed dividends.



### Quick Example

In liquidation, creditors are paid before common shareholders.

## Preferred Stock Definition

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Preferred stock is a hybrid security.
- 02 It has features of both debt and common equity.
- 03 Preferred shareholders usually receive fixed dividends.
- 04 They have priority over common shareholders for dividends.

#### Debt-like

Often fixed payments

#### Equity-like

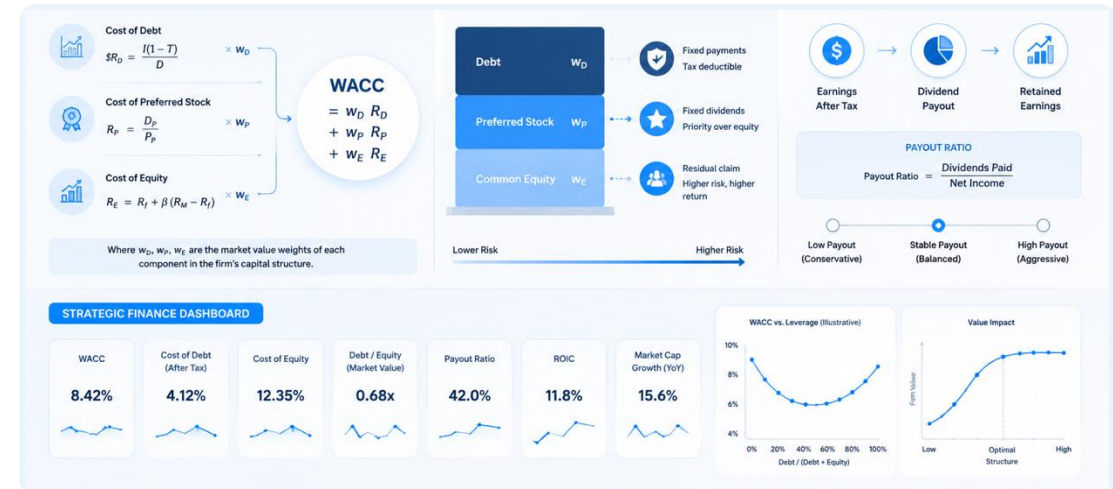
No maturity date

#### Priority

Before common dividends

#### Manager's Insight

Preferred stock can raise capital without giving the same voting power as common stock.



### Quick Example

A preferred share with \$5 annual dividend and 10% required return is valued at about \$50.

## Dividend Concepts

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A dividend is a cash distribution to shareholders.
- 02 Dividends are not guaranteed for common stock.
- 03 Expected dividends are a key input in many stock valuation models.
- 04 Dividend growth reflects expected company growth and reinvestment success.



### Manager's Insight

Dividend policy connects earnings, retained earnings, and shareholder value.



### Quick Example

If a stock is expected to pay \$2 next year,  $D_1 = \$2$  in the dividend valuation model.

## Required Return on Equity

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Required return on equity is the return shareholders expect for bearing risk.
- 02 It is used as the discount rate in stock valuation.
- 03 Equity is usually riskier than debt.
- 04 Higher required return reduces estimated stock value.

### Simple required return idea

$$\text{Required Return} = \text{Risk-Free Rate} + \text{Equity Risk Premium}$$

### Manager's Insight

A risky company must offer investors a higher expected return.



### Quick Example

If required return rises from 10% to 12%, the same expected dividend stream becomes less valuable.

# Stock Valuation Using Dividends

Valuation links cash flows, required return, and firm value.

## Core explanation

- 01 Common stock value can be estimated from expected dividends.
- 02 Dividends are cash flows to shareholders.
- 03 The discount rate is the required return on equity.
- 04 If dividends are uncertain, valuation depends heavily on assumptions.

## Dividend valuation principle

$$P_0 = \text{PV of Expected Future Dividends}$$

## Manager's Insight

Stock valuation is harder than bond valuation because dividends are not guaranteed.



## Quick Example

If expected dividends rise or the required return falls, the estimated stock value increases.

## Constant Growth Dividend Model

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 This model assumes dividends grow at a constant rate forever.
- 02  $D1$  = dividend expected next year.
- 03  $r$  = required return on equity;  $g$  = constant dividend growth rate.
- 04 Important condition:  $r$  must be greater than  $g$ .

### Constant growth model

$$P_0 = D1 / (r - g)$$

### Manager's Insight

Small changes in  $r$  or  $g$  can cause large changes in stock value.



### Quick Example

Solved:  $D1 = \$2.40$ ,  $r = 12\%$ ,  $g = 4\%$ .  
 $P_0 = 2.40 \div (0.12 - 0.04) = \$30.00$ .

## Zero-Growth Stock Valuation

Valuation links cash flows, required return, and firm value.

### Core explanation

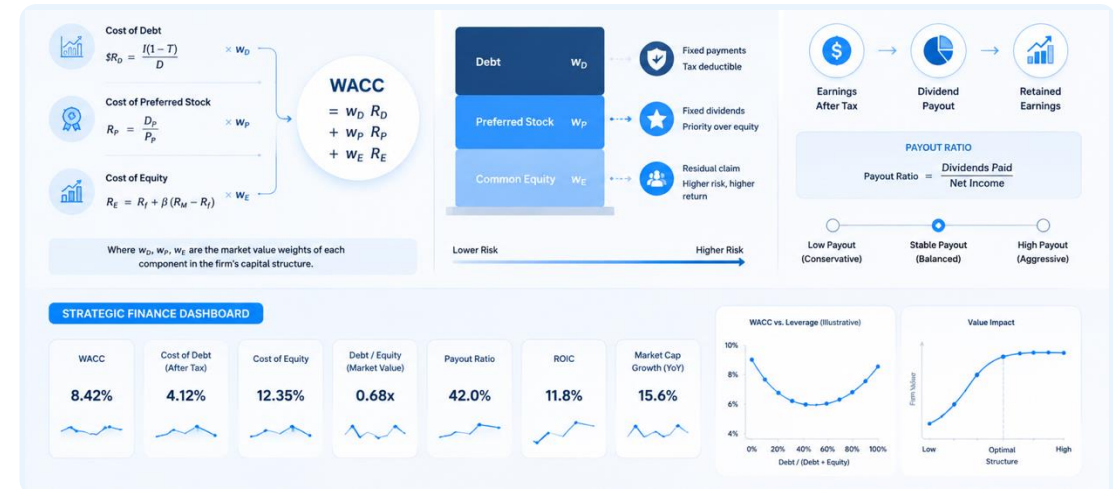
- 01 Zero growth means dividends stay constant every year.
- 02 The stock is valued like a perpetuity.
- 03  $D$  = constant annual dividend.
- 04  $r$  = required return on equity.

### Zero-growth model

$$P_0 = D / r$$

### Manager's Insight

Preferred stock is often valued using this simple perpetuity logic.



### Quick Example

Solved:  $D = \$6$ ,  $r = 12\%$ .  
 $P_0 = 6 \div 0.12 = \$50.00$ .

## Nonconstant Growth Overview

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Many firms do not grow at one constant rate forever.
- 02 Growth may be high at first, then become stable later.
- 03 Analysts estimate dividends for the high-growth period separately.
- 04 Then they calculate a terminal value for the stable-growth period.

**High growth**  
Forecast each dividend

**Stable growth**  
Estimate terminal value

**Present value**  
Discount all amounts

### Manager's Insight

Nonconstant growth valuation is more realistic, but requires more assumptions.



### Quick Example

A firm may grow dividends by 15% for 3 years, then 4% forever.

## Earnings and Stock Value

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Earnings affect stock value because they support future dividends and growth.
- 02 Higher quality earnings are more useful for valuation.
- 03 Investors care about sustainability, not just one-year profit.
- 04 Reinvested earnings can create value if they earn strong returns.

**Earnings**  
Accounting  
profit



**Cash flow**  
Money  
available



**Dividends/growth**  
Shareholder  
value

### Manager's Insight

Earnings matter most when they convert into future cash flows.



### Quick Example

A company with high reported earnings but weak cash flow may not deserve a high valuation.

## Price-Earnings Approach

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 The P/E approach estimates price using earnings per share and a market multiple.
- 02  $EPS = \text{earnings per share.}$
- 03 P/E multiple reflects growth expectations and risk.
- 04 Use comparable companies from the same industry when possible.

### Price-earnings approach

$$\text{Estimated Stock Price} = EPS \times \text{P/E Multiple}$$

### Manager's Insight

The P/E method is quick but depends on choosing a reasonable multiple.



### Quick Example

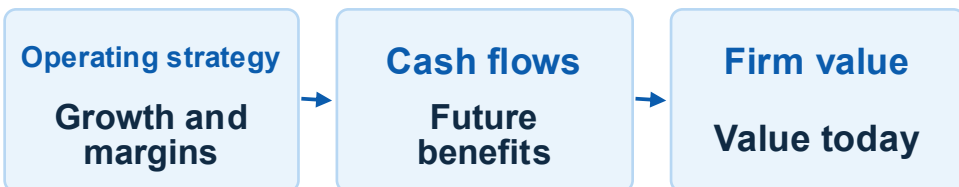
Solved:  $EPS = \$4$  and  $P/E = 15$ .  
Estimated price =  $4 \times 15 = \$60$ .

## Firm Value Overview

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Firm value is the value of the whole business.
- 02 It includes the value available to all capital providers.
- 03 It is affected by expected cash flows, growth, and risk.
- 04 Valuation helps managers choose strategies that create value.



### Manager's Insight

The goal is not only to value securities, but to understand what creates firm value.



### Quick Example

A project that increases expected future free cash flow can increase firm value.

# Enterprise Value Concept

Valuation links cash flows, required return, and firm value.

## Core explanation

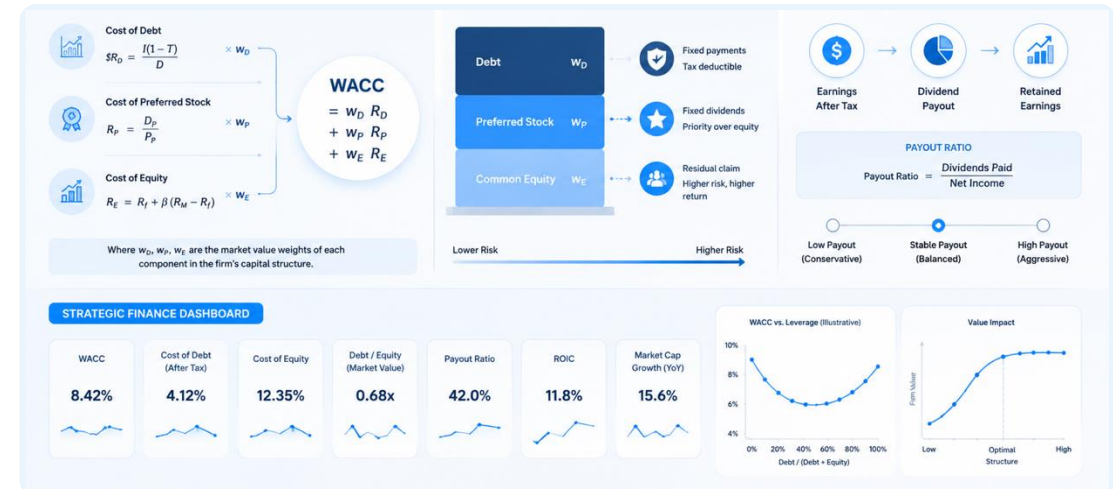
- 01 Enterprise value estimates the value of the operating business.
- 02 It includes claims of debt holders and equity holders.
- 03 Cash is subtracted because excess cash is not part of operating value.
- 04 EV helps compare firms with different debt levels.

## Enterprise value

$$\text{Enterprise Value} = \text{Equity Value} + \text{Debt} + \text{Preferred Stock} - \text{Cash}$$

## Manager's Insight

EV focuses on the whole firm, not only common shareholders.



## Quick Example

Solved: Equity = \$500m, debt = \$150m, cash = \$40m.

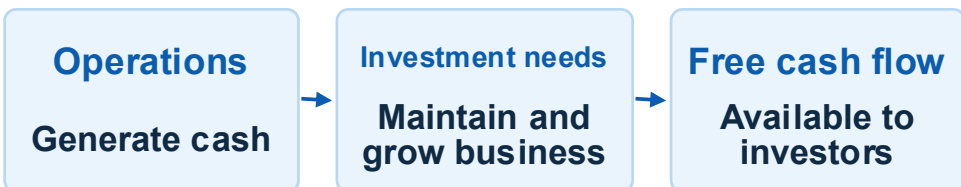
$$EV = 500 + 150 - 40 = \$610m.$$

## Free Cash Flow Concept

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Free cash flow is cash generated after operating and investment needs.
- 02 It is cash available to capital providers.
- 03 Profit and free cash flow are not the same.
- 04 Valuation should focus on future cash that investors can receive.



### Manager's Insight

A firm with strong accounting profit but weak cash flow may still have valuation problems.



### Quick Example

If operating cash flow is \$500,000 and required investment is \$200,000, free cash flow is about \$300,000.

## Estimating Firm Value from Expected Cash Flows

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Estimate future free cash flows.
- 02 Select a discount rate that reflects business and financial risk.
- 03 Discount the free cash flows to today.
- 04 Add terminal value when the firm continues beyond the explicit forecast period.

### Discounted cash flow view

**Firm Value = PV of Expected Free Cash Flows  
+ PV of Terminal Value**

### Manager's Insight

Firm valuation is a forecast disciplined by cash flows, timing, and risk.



### Quick Example

Higher expected FCF increases value;  
higher risk increases the discount rate  
and lowers value.

## Impact of Risk on Firm Value

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 Risk increases the required return.
- 02 A higher required return lowers the present value of future cash flows.
- 03 Risk can come from business operations, debt, competition, or the economy.
- 04 Reducing unnecessary risk can support firm value.

**Higher risk**  
Required return rises



Higher discount rate  
PV decreases



**Lower firm value**  
Investors pay less

### Manager's Insight

Value creation requires both higher cash flows and disciplined risk management.



### Quick Example

Two firms with the same expected cash flows can have different values if one is riskier.

## Mini-Case: Choosing between Bond and Stock Financing

Valuation links cash flows, required return, and firm value.

### Core explanation

- 01 A growing firm needs \$10 million to expand production.
- 02 Bond financing keeps ownership unchanged but creates fixed interest payments.
- 03 Stock financing avoids fixed payments but dilutes ownership.
- 04 The best choice depends on risk, cash flow stability, and cost of capital.

| Option   | Main benefit          | Main concern              |
|----------|-----------------------|---------------------------|
| Bond     | No ownership dilution | Fixed interest obligation |
| Stock    | No required interest  | Ownership dilution        |
| Decision | Compare cost and risk | Choose value-creating mix |

### Manager's Insight

Financing decisions affect risk, required return, and ultimately firm value.



### Quick Example

Ask students: if cash flows are stable, would debt be more attractive? If cash flows are uncertain, would equity be safer?

## Numerical Practice: Bond Valuation

Valuation links cash flows, required return, and firm value.

### Core explanation

01

Data: par = \$1,000; coupon rate = 8%; maturity = 5 years; YTM = 10%.

02

Coupon payment =  $1,000 \times 8\% = \$80$ .

03

PV coupons =  $80 \times 3.7908 = \$303.26$ .

04

PV par =  $1,000 \div (1.10)^5 = \$620.92$ .

05

Bond price =  $303.26 + 620.92 = \$924.18$ .

### Solved answer

**Bond Price = PV Coupons + PV Par = \$924.18**

### Manager's Insight

Because price is below \$1,000, the bond is a discount bond.



### Quick Example

Interpretation: coupon rate (8%) is below YTM (10%), so investors pay less than par.

## Numerical Practice: Stock Valuation

Valuation links cash flows, required return, and firm value.

### Core explanation

01 Data:  $D1 = \$2.40$ ; required return  $r = 12\%$ ; growth  $g = 4\%$ .

02 Formula:  $P0 = D1 / (r - g)$ .

03 Substitute:  $P0 = 2.40 / (0.12 - 0.04)$ .

04 Calculate denominator: 0.08.

05 Stock value = \$30.00.

### Solved answer

$$P0 = \$2.40 / 0.08 = \$30.00$$

### Manager's Insight

The result is only as reliable as the growth and required return assumptions.



### Quick Example

If market price is \$26, the stock may appear undervalued under these assumptions.

## Lecture Summary and Valuation Practice

Valuation links cash flows, required return, and firm value.

**Key message** An asset is valuable because of the future cash flows it is expected to generate, discounted at a rate that reflects time and risk.

### Bonds

Value coupons and par value using YTM.

### Stocks

Value expected dividends or earnings using required return.

### Firm value

Value expected free cash flows and terminal value.



| Practice item   | Student task                                                |
|-----------------|-------------------------------------------------------------|
| Bond valuation  | Calculate price and classify premium, discount, or par.     |
| Stock valuation | Use constant growth model and interpret value versus price. |
| Firm value      | Explain how higher risk changes required return and value.  |

## Assessment Practice 1

Solved questions: concepts, calculations, and applications.

QUESTION 01/10

Which statement best describes valuation in finance?

A Recording past transactions

**B** Estimating what an asset should be worth today

C Preparing a tax return

D Counting physical inventory

**ANSWER**

**B**

Estimating what an asset should be worth today

**EXPLANATION**

Valuation estimates today's worth by discounting expected future cash flows at an appropriate required return.

**EXAM TECHNIQUE:** Cash flows, timing, and risk drive value.

**Assessment Practice 2**

Solved questions: concepts, calculations, and applications.

**QUESTION 02/10**

A bond has par value of \$1,000 and an annual coupon rate of 8%. What is the annual coupon payment?

**A** \$8**B** \$80**C** \$800**D** \$1,080**ANSWER****B** \$80**EXPLANATION**

Annual coupon payment = Par value  $\times$  Coupon rate =  $\$1,000 \times 8\% = \$80$ .

**EXAM TECHNIQUE:** Apply the coupon rate to par value.

## Assessment Practice 3

Solved questions: concepts, calculations, and applications.

QUESTION 03/10

A bond price is calculated as:

A PV of coupons only

B PV of par value only

C PV of coupons plus PV of par value

D Coupon rate plus maturity

ANSWER

C PV of coupons plus PV of par value

EXPLANATION

A bond's value equals the present value of coupon payments plus the present value of the principal paid at maturity.

EXAM TECHNIQUE: Bond price has two parts: coupon annuity and par repayment.

## Assessment Practice 4

Solved questions: concepts, calculations, and applications.

QUESTION 04/10

If a bond's coupon rate is greater than its yield to maturity, the bond usually sells:

A At a discount

B At par

**C At a premium**

D At zero value

**ANSWER**

**C** At a premium

**EXPLANATION**

When the coupon rate is above the required return, investors pay more than par for the attractive coupon stream.

**EXAM TECHNIQUE:** Coupon rate > YTM means price > par.

## Assessment Practice 5

Solved questions: concepts, calculations, and applications.

QUESTION 05/10

When market interest rates increase, holding bond cash flows constant, bond prices usually:

A Increase

**B Decrease**

C Remain exactly the same

D Become equal to coupon payment

**ANSWER**

**B** Decrease

**EXPLANATION**

A higher required return increases the discount rate and reduces the present value of fixed bond cash flows.

**EXAM TECHNIQUE:** Rates and bond prices move in opposite directions.

## Assessment Practice 6

Solved questions: concepts, calculations, and applications.

QUESTION 06/10

Which cash flow is normally used to value common stock in the dividend valuation approach?

A Depreciation

**B Dividends**

C Accounts payable

D Inventory purchases

**ANSWER**

**B Dividends**

**EXPLANATION**

Common stock valuation can be based on the present value of expected dividends paid to shareholders.

**EXAM TECHNIQUE:** Stock value comes from expected shareholder cash flows.

**Assessment Practice 7**

Solved questions: concepts, calculations, and applications.

## QUESTION 07/10

A stock is expected to pay  $D1 = \$2.40$ , required return is 12%, and growth is 4%. What is the value?

**A** \$20**B** \$25**C** \$30**D** \$60**ANSWER****C** \$30**EXPLANATION**

Using  $P0 = D1/(r - g)$ :  $P0 = 2.40/(0.12 - 0.04) = 2.40/0.08 = \$30$ .

**EXAM TECHNIQUE:** In the Gordon model,  $r$  must be greater than  $g$ .

**Assessment Practice 8**

Solved questions: concepts, calculations, and applications.

## QUESTION 08/10

A preferred stock pays a constant dividend of \$6 per year. If required return is 12%, its value is:

**A** \$36**B** \$50**C** \$72**D** \$120**ANSWER****B** \$50**EXPLANATION**

For a constant dividend with no growth:  $\text{Value} = \text{Dividend} / \text{Required return} = \$6 / 0.12 = \$50$ .

**EXAM TECHNIQUE:** Zero growth is a perpetuity.

**Assessment Practice 9**

Solved questions: concepts, calculations, and applications.

**QUESTION 09/10**

A company has EPS of \$4 and a comparable industry P/E multiple of 15. Estimated stock price is:

**A** \$19**B** \$40**C** \$60**D** \$75**ANSWER****C** \$60**EXPLANATION**

Estimated price = EPS × P/E multiple = \$4 × 15 = \$60.

**EXAM TECHNIQUE:** Use comparable firms carefully when applying P/E.

**Assessment Practice 10**

Solved questions: concepts, calculations, and applications.

**QUESTION 10/10**

A firm has equity value of \$500 million, debt of \$150 million, and cash of \$40 million. Enterprise value is:

**A** \$310 million**B** \$500 million**C** \$610 million**D** \$690 million**ANSWER****C** \$610 million**EXPLANATION**

Enterprise Value = Equity Value + Debt – Cash = 500 + 150 – 40 = \$610 million.

**EXAM TECHNIQUE:** EV includes debt and excludes excess cash.



Valuation of Bonds, Stocks, and Firm Value

# Thank You