

COURSE: INVESTMENTS | CHAPTER 13

EQUITY VALUATION

Chapter Purpose

This chapter explains how investors estimate the value of common shares using:

- Dividends
- Free cash flow
- Earnings
- Book value
- Comparable companies
- Sustainable growth
- Residual income

Valuation converts expectations about a company's future into an estimated value today.

Learning Objectives

By the end of this chapter, students should be able to:

1. Explain equity valuation.
2. Distinguish market price from intrinsic value.
3. Describe the equity-valuation process.
4. Apply dividend discount models.
5. Apply zero-growth and constant-growth models.
6. Value multistage-growth companies.
7. Explain FCFE and FCFF valuation.
8. Apply price multiples.
9. Estimate sustainable growth.
10. Explain the present value of growth opportunities.
11. Apply residual-income valuation.
12. Conduct sensitivity and scenario analysis.
13. Identify valuation limitations.
14. Make an evidence-based investment judgment.

SECTION I

VALUATION FOUNDATIONS

Price is observable. Value must be estimated.

What Is Equity?

Equity represents an ownership interest in a company. A shareholder may benefit from:

- Dividends
- Growth in earnings
- Growth in the share price
- Voting rights
- Residual ownership value

Important: Shareholders are residual claimants — they receive what remains after other obligations are met.

Buying Part of a Business

Imagine a business is divided into one million equal pieces. Each piece is a share.

If you buy 10,000 shares: $10,000 \div 1,000,000 = 1\%$ ownership

Equity valuation asks: how much should that 1% ownership interest be worth?

What Is Equity Valuation?

Equity valuation is the process of estimating the economic value of:

- A company's total equity
- One ordinary share
- A potential equity investment

It considers:

- Expected cash flows
- Growth
- Risk
- Required return
- Financial performance
- Competitive position

Market Price vs Intrinsic Value

Market Price	Intrinsic Value
Current price in the market	Estimated economic value
Observable	Must be calculated
Influenced by supply and demand	Based on assumptions and analysis
May change quickly	Changes when valuation inputs change

Market price is a fact. Intrinsic value is an informed estimate.

— Price Is Not Always Value

A shop may display a laptop for ETB 80,000. After examining its condition and specifications, you may believe it is worth only ETB 65,000.

ETB 80,000 — Asking Price

What the seller currently requests.

ETB 65,000 — Estimated Value

What your own analysis says it is worth.

The same distinction applies to shares.

Why Can Price and Value Differ?

Market price and estimated intrinsic value may differ because investors have different:

- Information
- Forecasts
- Risk perceptions
- Required returns
- Time horizons
- Expectations
- Emotional reactions

Important: A difference does not automatically mean the market is wrong — the analyst's valuation may also be wrong.

Why Value Shares?

Equity valuation supports:

- Buy, hold or sell decisions
- Portfolio construction
- Initial public offerings
- Mergers and acquisitions
- Private-company transactions
- Performance evaluation
- Strategic planning
- Fairness opinions

The Equity-Valuation Process

Step 1

Understand the economy and industry.

Step 2

Analyse the company and its financial position.

Step 3

Forecast future performance.

Step 4

Select an appropriate valuation model.

Step 5

Estimate intrinsic value.

Step 6

Compare value with market price.

Step 7

Make an investment decision.

Sources of Equity Value

A company's equity value may come from its ability to generate:

- Dividends
- Free cash flow
- Earnings
- Profitable growth
- Valuable assets
- Competitive advantages

A valuable company is not simply a large company. It must generate economic benefits for its owners.

Major Valuation Approaches

1. Dividend Discount Models

Value expected dividends.

2. Free-Cash-Flow Models

Value cash available to investors.

3. Relative Valuation

Apply market multiples from comparable companies.

4. Residual-Income Valuation

Value book equity plus future economic profits.

SECTION II

DIVIDEND DISCOUNT MODELS

A share is worth the present value of the cash its owner expects to receive.

Shareholder Cash Flows

Dividend Income

Cash distributed by the company.

Selling Price

Cash received when the share is sold.

However, the future buyer also purchases the right to receive later dividends.

The ultimate source of equity value is the company's expected future distributions to shareholders.

General Dividend Discount Model

The value of a share is the present value of all expected future dividends:

$$P_0 = \sum D_t \div (1 + k_e)^t \quad \text{for } t = 1 \text{ to } \infty$$

Where:

- P_0 = estimated share value today
- D_t = expected dividend in period t
- k_e = required return on equity
- t = time period

Why Discount Dividends?

A dividend received in the future is worth less than the same amount received today because:

- The investor must wait.
- Future dividends are uncertain.
- Money available today can earn a return.
- Investors require compensation for risk.

Future dividends must be converted into present value.

Three Dividend-Growth Patterns

Zero Growth

Dividend remains constant forever.

Constant Growth

Dividend grows at one stable rate forever.

Multistage Growth

Growth changes over time.

Zero-Growth Dividend Model

If dividends remain constant forever:

$$P_0 = D \div k_e$$

- D = constant annual dividend
- k_e = required return

This model resembles the valuation of a perpetuity.

Zero-Growth Example

Suppose:

- Annual dividend = ETB 10
- Required return = 12%
- Dividend growth = 0%

$$P_0 = 10 \div 0.12$$

$$P_0 = \text{ETB } 83.33$$

Interpretation: the share's estimated value is ETB 83.33 if the dividend remains ETB 10 forever.

Limitations of the Zero-Growth Model

The model assumes:

- Dividends never increase.
- Dividends never decrease.
- The company continues indefinitely.
- Required return remains constant.

It may be more appropriate for:

- Stable preference shares
- Mature companies with constant distributions
- Simplified teaching examples

Constant-Growth Dividend Model

If dividends grow at a constant rate forever:

$$P_0 = D_1 \div (k_e - g)$$

- D_1 = expected dividend next year
- k_e = required return
- g = constant dividend-growth rate

This is the Gordon Growth Model

Important Gordon Model Rule

The model requires:

$$k_e > g$$

If the growth rate equals or exceeds the required return, the formula produces an unrealistic or undefined value.

Economic reason: a company cannot normally grow faster than the entire economy forever.

Gordon Model Example — Inputs

Suppose:

$$D_0 = \text{ETB } 8$$

Current dividend.

$$g = 5\%$$

Expected growth.

$$k_e = 13\%$$

Required return.

First calculate next year's dividend.

Step 1 — Calculate Next Dividend

$$D_1 = D_0 (1 + g)$$

$$D_1 = 8 (1.05)$$

$$D_1 = \text{ETB } 8.40$$

Important: the Gordon model uses D_1 , not D_0 .

Step 2 — Estimate Share Value

$$P_0 = 8.40 \div (0.13 - 0.05)$$

$$P_0 = 8.40 \div 0.08$$

$$P_0 = \text{ETB } 105$$

Estimated Intrinsic Value = ETB 105

Interpreting the Result

Suppose the market price is ETB 90.

Estimated value

ETB 105

Market price

ETB 90

The share appears potentially undervalued.

However, this conclusion depends on whether the dividend, growth and required-return estimates are reasonable.

What Increases Gordon Model Value?

Other things equal:

Expected dividend ↑

Share value rises.

Expected growth ↑

Share value rises.

Required return ↑

Share value falls.

Small changes in growth or required return may cause large changes in estimated value.

Gordon Model Sensitivity

Using $D_1 = \text{ETB } 8.40$:

Required Return	Growth	Estimated Value
12%	5%	ETB 120.00
13%	5%	ETB 105.00
14%	5%	ETB 93.33

Lesson: a higher required return reduces present value.

Gordon Model Assumptions

The model assumes:

- Dividends grow at a constant rate forever.
- Required return remains stable.
- Growth is lower than required return.
- Dividend policy reflects the company's economics.
- The company is a going concern.

It is most suitable for mature, stable dividend-paying companies.

Implied Required Return

The Gordon model can be rearranged:

$$k_e = (D_1 \div P_0) + g$$

Required return = expected dividend yield + expected growth

Implied Return Example

Suppose:

- Current price = ETB 105
- Expected dividend = ETB 8.40
- Growth = 5%

$$k_e = (8.40 \div 105) + 0.05$$

$$k_e = 0.08 + 0.05$$

$$k_e = 13\%$$

Why Use a Multistage Model?

Young companies may experience:

- High initial growth
- Declining growth as competition increases
- Stable long-term growth after maturity

A single constant-growth rate may not represent this pattern.

Use a multistage model.

Two-Stage Dividend Model

Stage 1 — High Growth

Forecast each dividend separately.

Stage 2 — Stable Growth

Estimate a terminal value using the Gordon model.

Final Step

Discount all dividends and the terminal value to today.

Two-Stage Example — Inputs

Suppose:

ETB 4

Current dividend.

20%

Growth for three
years.

6%

Long-term growth
after Year 3.

14%

Required return.

A three-year high-growth period is followed by stable growth.

Forecast Dividends for Years 1–3

$$\begin{aligned}D_1 &= 4 (1.20) = \text{ETB } 4.80 \\D_2 &= 4.80 (1.20) = \text{ETB } 5.76 \\D_3 &= 5.76 (1.20) = \text{ETB } 6.912\end{aligned}$$

Calculate the Year 4 Dividend

Stable growth begins after Year 3.

$$\begin{aligned}D_4 &= D_3 (1.06) \\D_4 &= 6.912 (1.06) \\D_4 &= \text{ETB } 7.32672\end{aligned}$$

Calculate Terminal Value

At the end of Year 3:

$$\begin{aligned}P_3 &= D_4 \div (k_e - g) \\P_3 &= 7.32672 \div (0.14 - 0.06) \\P_3 &= \text{ETB } 91.584\end{aligned}$$

Discount Year 1 Dividend

$$\begin{aligned}PV(D_1) &= 4.80 \div 1.14 \\PV(D_1) &= \text{ETB } 4.21\end{aligned}$$

Discount Year 2 Dividend

$$\begin{aligned}PV(D_2) &= 5.76 \div (1.14)^2 \\PV(D_2) &= \text{ETB } 4.43\end{aligned}$$

Discount Year 3 Cash Flows

At the end of Year 3, the investor receives the Year 3 dividend and owns a share worth the terminal value.

$$\begin{aligned}PV(D_3 + P_3) &= (6.912 + 91.584) \div (1.14)^3 \\PV(D_3 + P_3) &= \text{ETB } 66.48\end{aligned}$$

Two-Stage Estimated Value

$$P_0 = 4.21 + 4.43 + 66.48$$
$$P_0 = \text{ETB } 75.12$$

Interpretation: the estimated share value is ETB 75.12 under the specified growth and return assumptions.

Terminal Value Dominance

In many multistage models, terminal value represents a large proportion of total estimated value. This means the valuation is highly sensitive to:

- Long-term growth
- Required return
- Terminal-year earnings
- Terminal dividend
- Forecast period

A precise-looking valuation can still depend heavily on uncertain assumptions.

SECTION III

FREE-CASH-FLOW VALUATION

Some companies create value without paying large dividends.

Why Use Free Cash Flow?

Dividend models may be difficult to apply when:

- The company pays no dividend.
- Dividends are very small.
- Dividend policy does not reflect profitability.
- The company is privately owned.
- The analyst wants to value the entire business.

Free-cash-flow models focus on cash-generating capacity.

Free Cash Flow to Equity

FCFE is the cash potentially available to ordinary shareholders after considering:

- Operating expenses
- Taxes
- Reinvestment
- Capital expenditure
- Working-capital needs
- Net borrowing

$$\text{FCFE} = \text{NI} + \text{D\&A} - \text{CapEx} - \Delta\text{WC} + \text{Net Borrowing}$$

FCFE Valuation

Equity value equals the present value of expected FCFE:

$$\text{Equity Value} = \sum \text{FCFE}_t \div (1 + k_e)^t$$

Constant growth: Equity Value = $\text{FCFE}_1 \div (k_e - g)$

FCFE is discounted using the required return on equity.

FCFE Example

Suppose:

- Next year's FCFE = ETB 12 million
- Required return = 15%
- Stable growth = 5%

$$\begin{aligned}\text{Equity Value} &= 12,000,000 \div (0.15 - 0.05) \\ \text{Equity Value} &= \text{ETB } 120,000,000\end{aligned}$$

FCFE Value per Share

Suppose the company has two million shares:

$$\begin{aligned}\text{Value per Share} &= 120,000,000 \div 2,000,000 \\ \text{Value per Share} &= \text{ETB } 60\end{aligned}$$

Estimated Equity Value per Share = ETB 60

Free Cash Flow to the Firm

FCFF is the cash flow available to all capital providers:

- Shareholders
- Bondholders
- Other lenders

$$\text{FCFF} = \text{EBIT} (1 - T) + \text{D\&A} - \text{CapEx} - \Delta \text{WC}$$

FCFF is calculated before interest payments to debt providers.

FCFF Valuation

Enterprise value equals the present value of expected FCFF:

$$\text{Enterprise Value} = \sum \text{FCFF}_t \div (1 + \text{WACC})^t$$
$$\text{Constant growth: Enterprise Value} = \text{FCFF}_1 \div (\text{WACC} - g)$$

What Is WACC?

The weighted average cost of capital reflects the required returns of debt and equity providers.

$$\text{WACC} = w_d \cdot k_d (1 - T) + w_e \cdot k_e$$

- w_d = debt weight
- k_d = cost of debt
- T = tax rate
- w_e = equity weight
- k_e = cost of equity

FCFF Example — Enterprise Value

Suppose:

- FCFF next year = ETB 30 million
- WACC = 12%
- Long-term growth = 4%

$$\text{Enterprise Value} = 30,000,000 \div (0.12 - 0.04)$$
$$\text{Enterprise Value} = \text{ETB } 375,000,000$$

From Enterprise Value to Equity Value

Suppose enterprise value = ETB 375 million, interest-bearing debt = ETB 95 million and non-operating cash = ETB 20 million.

$$\text{Equity Value} = \text{EV} - \text{Debt} + \text{Cash}$$

$$\text{Equity Value} = 375 - 95 + 20$$

$$\text{Equity Value} = \text{ETB 300 million}$$

FCFF Value per Share

Suppose there are five million shares:

$$\begin{aligned}\text{Value per Share} &= 300,000,000 \div 5,000,000 \\ \text{Value per Share} &= \text{ETB } 60\end{aligned}$$

Estimated Value per Share = ETB 60

FCFE vs FCFF

FCFE	FCFF
Values equity directly	Values the entire operating business
Discounted at cost of equity	Discounted at WACC
Includes net borrowing	Calculated before financing flows
Useful with stable leverage	Useful when leverage changes
Produces equity value	Produces enterprise value

SECTION IV

RELATIVE VALUATION

Estimate value by comparing the company with similar businesses.

— Using Comparable Prices

Suppose similar houses sell for ETB 10 million. A comparable house in the same location may also be worth around ETB 10 million, after adjusting for:

- Size
- Quality
- Age
- Condition
- Location

Relative equity valuation applies the same basic logic to companies.

What Is a Valuation Multiple?

A valuation multiple compares market value with a company measure. Common multiples include:

- Price-to-earnings
- Price-to-book
- Price-to-sales
- Enterprise value to EBITDA
- Enterprise value to sales

$$\text{Multiple} = \text{Market Value} \div \text{Financial Measure}$$

Price-to-Earnings Ratio

$$\text{P/E} = \text{Market Price per Share} \div \text{Earnings per Share}$$

The P/E ratio shows how much investors pay for each ETB 1 of earnings. Example: share price = ETB 120 and EPS = ETB 10.

$$\text{P/E} = 12$$

Investors pay ETB 12 for each ETB 1 of annual earnings.

Trailing vs Forward P/E

Trailing P/E

Uses earnings from the previous 12 months.

Forward P/E

Uses expected future earnings.

Forward P/E is more directly connected to future expectations but depends on uncertain forecasts.

P/E Valuation Example

Suppose company EPS = ETB 12 and the comparable-company P/E = 10.

$$\begin{aligned}\text{Estimated Price} &= \text{EPS} \times \text{P/E} \\ \text{Estimated Price} &= 12 \times 10 \\ \text{Estimated Price} &= \text{ETB } 120\end{aligned}$$

What Influences P/E?

A higher P/E may reflect:

- Higher expected growth
- Lower perceived risk
- Strong competitive advantage
- High-quality earnings
- Low required return

A lower P/E may reflect:

- Low expected growth
- High risk
- Weak earnings quality
- Financial distress
- Cyclical peak earnings

Justified P/E

Using the Gordon model:

$$P_0 \div E_1 = \text{Dividend Payout Ratio} \div (k_e - g)$$

This shows that justified P/E increases when:

- Dividend payout rises
- Expected growth rises
- Required return falls

Price-to-Book Ratio

$$\text{P/B} = \text{Market Price per Share} \div \text{Book Value per Share}$$

P/B compares the market value of equity with its accounting value. It may be useful for:

- Banks
- Financial institutions
- Asset-intensive businesses
- Companies with meaningful balance-sheet assets

P/B Valuation Example

Suppose book value per share = ETB 80 and the comparable P/B multiple = 1.5.

$$\begin{aligned}\text{Estimated Price} &= 80 \times 1.5 \\ \text{Estimated Price} &= \text{ETB } 120\end{aligned}$$

Price-to-Sales Ratio

$$P/S = \text{Market Capitalization} \div \text{Annual Sales}$$

P/S can help when earnings are:

- Negative
- Temporarily depressed
- Highly volatile

Limitation: sales do not show whether the company is profitable.

EV/EBITDA

$$\text{EV/EBITDA} = \text{Enterprise Value} \div \text{EBITDA}$$

This multiple compares the operating value of a company with earnings before:

- Interest
- Taxes
- Depreciation
- Amortization

It is often used for firms with different financing structures.

EV/EBITDA Example

Suppose EBITDA = ETB 50 million, comparable EV/EBITDA = 7, debt = ETB 90 million, cash = ETB 20 million and shares = 4 million.

$$\begin{aligned}\text{EV} &= 50 \times 7 = \text{ETB } 350 \text{ million} \\ \text{Equity Value} &= 350 - 90 + 20 = \text{ETB } 280 \text{ million} \\ \text{Value per Share} &= 280 \div 4 = \text{ETB } 70\end{aligned}$$

Selecting Comparable Companies

Good comparable companies should have similar:

- Business activities
- Customers
- Growth prospects
- Risk
- Profit margins
- Capital intensity
- Geographic exposure
- Accounting policies

A company is not comparable merely because it operates in the same industry.

Strengths and Limitations of Multiples

Strengths

- Easy to understand
- Quick to calculate
- Uses current market information
- Supports peer comparison

Limitations

- Comparable firms may not be truly similar.
- Market mispricing may affect all peers.
- Accounting policies may differ.
- Multiples may ignore long-term fundamentals.

SECTION V

GROWTH AND ECONOMIC VALUE

Growth matters only when it earns more than the cost of capital.

Sustainable Growth Rate

A company's sustainable growth rate can be estimated as:

$$g = b \times \text{ROE}$$
$$b = 1 - \text{Dividend Payout Ratio}$$

- b = earnings-retention ratio
- ROE = return on equity

Sustainable Growth Example

Suppose ROE = 15%, dividend payout ratio = 40% and retention ratio = 60%.

$$g = 0.60 \times 0.15$$
$$g = 9\%$$

Interpretation: the company may support approximately 9% growth from retained earnings under stable assumptions.

Growth Does Not Always Create Value

Growth creates value only when the return earned on new investment exceeds the required return.

If $ROE > k_e$

Growth may create value.

If $ROE < k_e$

Growth may destroy value.

Growth is valuable only when investment returns justify the capital committed.

Present Value of Growth Opportunities

The value of a share can be separated into:

$$P_0 = (E_1 \div k_e) + PVGO$$

- $E_1 \div k_e$ = value without future growth
- PVGO = present value of growth opportunities

PVGO Example

Suppose share value = ETB 120, expected earnings per share = ETB 12 and required return = 15%.

No-growth value: $12 \div 0.15 = \text{ETB } 80$

PVGO = $120 - 80$

PVGO = ETB 40

Residual-Income Valuation

Residual income is the income remaining after charging shareholders for the equity capital used.

$$\begin{aligned}\text{Residual Income} &= \text{Net Income} - (k_e \times \text{Beginning Book Equity}) \\ \text{Equity Value} &= \text{Book Value} + \text{PV of Future Residual Income}\end{aligned}$$

Residual-Income Example

Suppose beginning book equity = ETB 100 million, net income = ETB 18 million and required return = 12%.

$$\begin{aligned}\text{Equity charge: } & 0.12 \times 100 = \text{ETB } 12 \text{ million} \\ \text{Residual income: } & 18 - 12 = \text{ETB } 6 \text{ million}\end{aligned}$$

Positive residual income indicates earnings above the required equity charge.

SECTION VI

VALUATION DECISIONS AND RISK

Test the assumptions before trusting the number.

Sensitivity Analysis

Sensitivity analysis changes one assumption at a time. Typical variables include:

- Growth rate
- Required return
- Profit margin
- Dividend payout
- Terminal multiple
- WACC

Purpose: identify which assumptions have the greatest effect on estimated value.

Scenario Analysis

Scenario analysis changes several assumptions together.

Bear Scenario

Weak growth, low margins and high required return.

Base Scenario

Most reasonable expected conditions.

Bull Scenario

Strong growth, high margins and lower required return.

A valuation range is often more informative than one exact number.

Margin of Safety

Suppose estimated intrinsic value = ETB 120 and market price = ETB 90.

$$\text{Margin of Safety} = (120 - 90) \div 120$$
$$\text{Margin of Safety} = 25\%$$

The share trades 25% below the estimated intrinsic value.

Common Valuation Mistakes

Avoid:

- Confusing price with value
- Using unrealistic perpetual growth
- Using D_0 instead of D_1
- Mixing FCFE with WACC
- Mixing FCFF with cost of equity
- Ignoring debt and cash
- Selecting poor comparables
- Treating accounting earnings as cash flow
- Relying on one model
- Presenting estimates as certain facts

Integrated Practical Case

A company reports:

- Current dividend = ETB 6
- Expected dividend growth = 5%
- Required return = 12%
- Expected EPS = ETB 9
- Comparable P/E = 11
- Expected FCFE = ETB 7.5 million
- Long-term FCFE growth = 4%
- Shares outstanding = 1 million
- Current market price = ETB 85

Student Tasks

1. Calculate next year's dividend.
2. Estimate value using the Gordon model.
3. Estimate value using the P/E multiple.
4. Estimate value using the FCFE model.
5. Compare the three estimates.
6. Develop a reasonable valuation range.
7. Compare the range with the market price.
8. Identify the assumptions behind each result.
9. Recommend buy, hold or sell.
10. Explain the risks affecting your recommendation.

Instructor Answer Check

Dividend model: $D_1 = 6 (1.05) = \text{ETB } 6.30$

$P_0 = 6.30 \div (0.12 - 0.05) = \text{ETB } 90$

P/E model: $P_0 = 9 \times 11 = \text{ETB } 99$

FCFE model: $7.5 \div (0.12 - 0.04) = \text{ETB } 93.75 \text{ million}$

FCFE value per share = ETB 93.75

Valuation range: approximately ETB 90–99 per share.

Key Takeaways

- Equity represents ownership in a company.
- Market price and intrinsic value are different concepts.
- Valuation estimates the present value of expected economic benefits.
- Dividend models value expected shareholder distributions; the Gordon model requires $k_e > g$.
- Multistage models allow growth to change over time.
- FCFE values equity directly; FCFF values the operating business.
- Multiples estimate value using comparable companies.
- Sustainable growth depends on retention and ROE.
- Growth creates value only when returns exceed capital costs.
- Residual income measures profit after an equity charge.
- Valuation is highly sensitive to assumptions, so a range is more credible than one estimate.

Valuation is not about finding a perfectly correct number. It is about making disciplined assumptions and understanding what drives value.

Discussion Questions

1. Why might market price differ from intrinsic value?
2. When is the Gordon model appropriate?
3. Why must required return exceed perpetual growth?
4. Can a company with no dividends still have substantial value?
5. When should an analyst use FCFE instead of FCFF?
6. Why can comparable-company valuation be misleading?
7. Does faster growth always create shareholder value?
8. How should an analyst select a margin of safety?
9. Which valuation assumptions are usually most uncertain?
10. Why should investors use more than one valuation model?

Next Chapter — Chapter 14: Financial Statement Analysis

The next chapter will cover:

- Purpose of financial statement analysis
- Income statement, balance sheet and cash-flow statement
- Common-size analysis and trend analysis
- Liquidity, efficiency, leverage and profitability ratios
- DuPont analysis
- Earnings quality and accounting warning signs
- Forecasting financial performance
- Connecting financial analysis with equity valuation

THANK YOU

Questions and Discussion

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