

08

Capital Structure and Leverage

Presented by

Dr Abenet Yohannes, Ph.D. | Financial Management Training Series



Follow: **Dr Abenet Yohannes, Ph.D.** for more contents

Learning Objectives

By the end of this chapter, participants will be able to:

- Define capital structure
- Distinguish capital structure from financial structure
- Identify major sources of long-term financing
- Explain business and financial risk
- Calculate operating leverage
- Calculate financial leverage
- Calculate combined leverage
- Conduct operating and financial break-even analysis
- Apply EBIT–EPS analysis
- Determine the financing-indifference point
- Explain major capital-structure theories
- Evaluate the effects of debt on risk, return and value
- Explain the relationship between leverage and WACC
- Identify factors affecting financing decisions
- Recommend an appropriate capital structure

Chapter Roadmap

This chapter covers:

1. Meaning of capital structure
2. Sources of long-term finance
3. Business and financial risk
4. Operating leverage
5. Financial leverage
6. Combined leverage
7. Break-even analysis
8. EBIT–EPS analysis
9. Capital-structure theories
10. Optimal capital structure
11. Capital structure and WACC
12. Practical financing decisions

01 SECTION 1 **Introduction to Capital Structure**

What Is Capital Structure?

Capital structure is the combination of long-term financing sources used by an organization.

It commonly includes:

- Long-term debt
- Preferred stock
- Common equity
- Retained earnings
- Hybrid securities

Capital Structure in Simple Terms

Capital structure answers the question:

How should an organization finance its long-term assets and investments?

The decision normally involves choosing between:

- Borrowed funds
- Owners' funds
- Internally generated funds

Capital Structure vs Financial Structure

Capital Structure

Focuses on long-term financing:

- Long-term debt
- Preferred stock
- Common equity

Financial Structure

Includes all financing sources:

- Current liabilities
- Short-term debt
- Long-term debt
- Equity

Financial structure is broader than capital structure.

Capital Structure vs Asset Structure

Capital Structure

Shows how the organization is financed.

Asset Structure

Shows how funds are invested in:

- Current assets
- Fixed assets
- Intangible assets
- Long-term investments

The financing mix should be appropriate for the asset mix.

Why Capital Structure Matters

Capital structure affects:

- Financing cost
- Financial risk
- Shareholder return
- Organizational value
- Cash-flow obligations
- Credit rating
- Borrowing capacity
- Financial flexibility
- Control and ownership

The Central Financing Question

Management must determine:

- How much debt should be used?
- How much equity should be used?
- Should profits be retained?
- Should new shares be issued?
- Can the organization meet fixed payments?
- Which financing mix minimizes overall cost?

Capital Structure Decision

An appropriate capital structure should:

- Support strategic objectives
- Maintain financial stability
- Minimize financing costs
- Preserve sufficient liquidity
- Control financial risk
- Protect organizational value
- Maintain access to future financing

02

SECTION 2

Sources of Long-Term Finance

Main Financing Sources

Organizations may finance long-term investments through:

- Retained earnings
- Common shares
- Preferred shares
- Bank loans
- Bonds
- Lease financing
- Development-bank financing
- Convertible securities
- Owner contributions

Debt Financing

Debt financing involves borrowing funds that must be repaid.

Debt normally requires:

- Interest payments
- Principal repayment
- Compliance with loan conditions
- Collateral in some cases
- Regular financial reporting

Advantages of Debt Financing

Debt financing may provide:

- Interest tax benefits
- No direct ownership dilution
- Predictable financing cost
- Potential increase in shareholder return
- Temporary access to large amounts of capital
- Discipline through contractual repayments

Disadvantages of Debt Financing

Debt creates:

- Mandatory interest payments
- Principal repayment obligations
- Default risk
- Financial distress risk
- Restrictive covenants
- Reduced borrowing capacity
- Pressure on organizational cash flow

Equity Financing

Equity financing represents funds contributed by owners or shareholders.

It may include:

- Common shares
- Owner contributions
- Retained earnings
- Private-equity investment

Advantages of Equity Financing

Equity financing provides:

- No mandatory interest payments
- No fixed repayment date
- Lower default risk
- Greater cash-flow flexibility
- Improved borrowing capacity
- Long-term risk-sharing

Disadvantages of Equity Financing

Equity financing may involve:

- Ownership dilution
- Reduced control
- Higher required return
- Dividend expectations
- Flotation costs
- More complex governance
- Sharing future profits

Preferred Stock Financing

Preferred stock combines features of debt and equity.

It generally provides:

- Fixed dividends
- Priority over common shares
- No ordinary voting rights
- No compulsory principal repayment
- Lower risk than common equity

Retained Earnings

Retained earnings are profits reinvested in the organization.

Advantages include:

- No flotation cost
- No immediate ownership dilution
- Greater financing flexibility
- Faster access to funds

Retained earnings still have an opportunity cost.

Lease Financing

Lease financing allows an organization to use an asset without purchasing it immediately.

It may provide:

- Lower initial cash requirement
- Flexible payment arrangements
- Access to modern assets
- Reduced obsolescence risk

Lease obligations still create fixed financial commitments.

03

SECTION 3

Capital-Structure Measures

Debt Ratio

The debt ratio measures the proportion of assets financed through debt.

$$\text{Debt Ratio} = \left(\frac{\text{Total Debt}}{\text{Total Assets}} \right) \times 100$$

Debt-to-Equity Ratio

$$\text{Debt-to-Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

A higher ratio normally indicates greater financial leverage.

Long-Term Debt-to-Capital Ratio

$$\text{Long-Term Debt-to-Capital} = \text{Long-Term Debt} / (\text{Long-Term Debt} + \text{Equity})$$

This ratio focuses specifically on long-term financing.

Equity Ratio

$$\text{Equity Ratio} = \left(\text{Total Equity} / \text{Total Assets} \right) \times 100$$

A higher equity ratio generally indicates lower dependence on debt.

Interest-Coverage Ratio

$$\text{Interest Coverage} = \text{EBIT} / \text{Interest Expense}$$

It measures the organization's ability to meet interest payments.

Interest-Coverage Example

Assume:

- EBIT: ETB 6 million
- Interest expense: ETB 1.5 million

$$\begin{aligned}\text{Interest Coverage} &= 6 / 1.5 \\ &= 4 \text{ times}\end{aligned}$$

Debt-Service Coverage Ratio

$$\text{DSCR} = \text{Cash Available for Debt Service} / (\text{Principal Repayment} + \text{Interest})$$

A ratio above 1 indicates that available cash exceeds scheduled debt service.

Interpreting Leverage Ratios

High leverage may indicate:

- Increased shareholder return potential
- Higher financial risk
- Greater fixed commitments
- Lower financing flexibility
- Greater sensitivity to declining earnings

Ratios should be compared with industry and historical benchmarks.

04

SECTION 4

Meaning of Leverage

What Is Leverage?

Leverage is the use of fixed costs to increase the effect of changes in sales or operating income on returns.

The main types are:

1. Operating leverage
2. Financial leverage
3. Combined leverage

Purpose of Leverage

Leverage may be used to:

- Increase profitability
- Improve shareholder return
- Expand operations
- Finance assets
- Increase production capacity
- Benefit from fixed-cost structures

Leverage also increases risk.

The Leverage Principle

When fixed costs are present:

- A small increase in activity may produce a larger increase in profit
- A small decrease in activity may produce a larger decrease in profit

Leverage magnifies both positive and negative outcomes.

05

SECTION 5

Business Risk

What Is Business Risk?

Business risk is the uncertainty in operating income arising from the nature of the organization's operations.

It exists before considering financing decisions.

Sources of Business Risk

Business risk may arise from:

- Demand variability
- Selling-price volatility
- Input-cost changes
- Competition
- Technology
- Regulation
- Product quality
- Economic conditions
- Operating-cost structure

Fixed and Variable Operating Costs

Fixed Operating Costs

Remain relatively unchanged within the relevant activity range.

- Rent
- Depreciation
- Permanent salaries
- Insurance

Variable Operating Costs

Change with production or sales.

- Raw materials
- Sales commission
- Packaging
- Direct transport

Operating Cost Structure

An organization with high fixed costs and low variable costs has:

- High operating leverage
- Greater profit potential when sales increase
- Greater operating risk when sales decline

06

SECTION 6

Contribution Margin

Contribution Margin

Contribution margin is the amount remaining after deducting variable costs from sales.

$$\text{Contribution Margin} = \text{Sales} - \text{Variable Costs}$$

Contribution Margin per Unit

$$\text{Contribution per Unit} = \text{Selling Price per Unit} - \text{Variable Cost per Unit}$$

Contribution first covers fixed costs and then generates operating profit.

Contribution-Margin Ratio

$$\text{Contribution-Margin Ratio} = \left(\frac{\text{Contribution Margin}}{\text{Sales}} \right) \times 100$$

Contribution Example

Assume:

- Selling price: ETB 100 per unit
- Variable cost: ETB 60 per unit

$$\begin{aligned}\text{Contribution per Unit} &= 100 - 60 \\ &= \text{ETB } 40\end{aligned}$$

07

SECTION 7

Operating Break-Even Analysis

Operating Break-Even Point

The operating break-even point is the level of sales at which:

$$\text{EBIT} = 0$$

At break-even:

$$\text{Contribution Margin} = \text{Fixed Operating Costs}$$

Break-Even Units

$$Q_{BE} = F / (P - V)$$

- F = fixed operating costs
- P = selling price per unit
- V = variable cost per unit

Break-Even Example

Assume:

- Fixed costs: ETB 2,000,000
- Selling price: ETB 100
- Variable cost: ETB 60

$$\begin{aligned} Q_{BE} &= 2,000,000 / (100 - 60) \\ Q_{BE} &= 50,000 \text{ units} \end{aligned}$$

Break-Even Sales Revenue

$$\text{Break-Even Sales} = \text{Fixed Costs} / \text{Contribution-Margin Ratio}$$

Break-Even Revenue Example

Contribution-margin ratio:

$$40 / 100 = 40\%$$

Therefore:

$$\begin{aligned}\text{Break-Even Sales} &= 2,000,000 / 0.40 \\ &= \text{ETB } 5,000,000\end{aligned}$$

Margin of Safety

Margin of safety measures how much actual or forecast sales exceed break-even sales.

$$\text{Margin of Safety} = \text{Actual Sales} - \text{Break-Even Sales}$$

Margin-of-Safety Percentage

$$\text{Margin-of-Safety Percentage} = \left(\frac{\text{Actual Sales} - \text{Break-Even Sales}}{\text{Actual Sales}} \right) \times 100$$

A larger margin indicates greater operating protection.

08

SECTION 8

Operating Leverage

What Is Operating Leverage?

Operating leverage arises from fixed operating costs.

It measures how sensitive EBIT is to changes in sales.

Degree of Operating Leverage

$$\text{DOL} = \% \Delta \text{ EBIT} / \% \Delta \text{ Sales}$$

DOL Using Contribution Margin

At a given level of sales:

$$\text{DOL} = \text{Contribution Margin} / \text{EBIT}$$

Unit-Based DOL Formula

$$DOL = Q(P - V) / (Q(P - V) - F)$$

- Q = units sold
- P = selling price
- V = variable cost per unit
- F = fixed operating costs

Operating-Leverage Example

Assume:

- Sales: ETB 10 million
- Variable costs: ETB 6 million
- Fixed operating costs: ETB 2 million

Contribution:

$$10 - 6 = \text{ETB } 4 \text{ million}$$

EBIT:

$$4 - 2 = \text{ETB } 2 \text{ million}$$

Calculate DOL

$$\begin{aligned}\text{DOL} &= 4,000,000 / 2,000,000 \\ \text{DOL} &= 2\end{aligned}$$

DOL Interpretation

A DOL of 2 means that:

- A 10% increase in sales is expected to increase EBIT by approximately 20%
- A 10% decrease in sales is expected to reduce EBIT by approximately 20%

The relationship applies around the current sales level.

Sales Increase Example

- Current EBIT: ETB 2 million
- Sales increase: 10%
- DOL: 2

$$\begin{aligned}\% \Delta \text{ EBIT} &= 2 \times 10\% \\ &= 20\%\end{aligned}$$

New EBIT:

$$2,000,000 \times 1.20 = \text{ETB } 2,400,000$$

Sales Decline Example

- Sales decline: 15%
- DOL: 2

$$\begin{aligned}\% \Delta \text{ EBIT} &= 2 \times (-15\%) \\ &= -30\%\end{aligned}$$

EBIT is expected to decline by approximately 30%.

High Operating Leverage

High operating leverage means:

- High fixed operating costs
- Lower variable cost per unit
- Strong profit growth when sales increase
- Greater operating losses when sales decline
- Greater business risk

Low Operating Leverage

Low operating leverage means:

- Lower fixed operating costs
- Higher variable costs
- More flexible cost structure
- Lower sensitivity of EBIT to sales changes
- Lower operating risk

Industries with High Operating Leverage

Examples may include:

- Airlines
- Hotels
- Telecommunications
- Manufacturing
- Utilities
- Software platforms
- Infrastructure
- Commercial real estate

Managing Operating Leverage

Organizations can manage operating leverage through:

- Outsourcing
- Leasing instead of purchasing
- Flexible staffing
- Variable supplier contracts
- Shared facilities
- Scalable technology
- Demand forecasting
- Capacity planning

09

SECTION 9

Financial Risk

What Is Financial Risk?

Financial risk is the additional risk imposed on owners because the organization uses debt or other fixed-payment financing.

Sources of Financial Risk

Financial risk arises from:

- Interest payments
- Principal repayments
- Lease commitments
- Preferred dividends
- Refinancing requirements
- Loan covenants
- Currency-denominated debt

Financial Leverage

Financial leverage is the use of fixed financial obligations to increase the effect of changes in EBIT on shareholder earnings.

The most common source is debt financing.

Potential Benefit of Financial Leverage

When the return on assets exceeds the after-tax cost of debt:

- Shareholder returns may increase
- Earnings per share may rise
- Return on equity may improve

This is sometimes called favorable leverage.

Unfavorable Financial Leverage

When the return on assets is below the cost of debt:

- Shareholder return declines
- Earnings per share may fall
- Financial distress risk increases
- Equity value may decline

10

SECTION 10

Financial Break-Even Point

Financial Break-Even Point

The financial break-even point is the EBIT level at which earnings available to common shareholders equal zero.

Without preferred dividends:

$$\text{EBIT}_{\text{BE}} = I$$

Where I is interest expense.

Financial Break-Even with Preferred Dividends

$$\text{EBIT_BE} = I + (\text{PD} / (1 - T))$$

- PD = preferred dividends
- T = tax rate

Financial Break-Even Example

Assume:

- Interest expense: ETB 800,000
- No preferred dividends

The financial break-even EBIT is:

ETB 800,000

Below this level, earnings available to common shareholders are negative.

11

SECTION 11

Degree of Financial Leverage

Degree of Financial Leverage

DFL measures the sensitivity of earnings per share to changes in EBIT.

$$\text{DFL} = \% \Delta \text{ EPS} / \% \Delta \text{ EBIT}$$

DFL Formula

Without preferred stock:

$$\text{DFL} = \text{EBIT} / (\text{EBIT} - \text{I})$$

Where I is interest expense.

DFL with Preferred Dividends

$$\text{DFL} = \text{EBIT} / \left(\text{EBIT} - I - \left(\text{PD} / (1 - T) \right) \right)$$

Financial-Leverage Example

Assume:

- EBIT: ETB 3 million
- Interest: ETB 1 million

$$\text{DFL} = 3,000,000 / (3,000,000 - 1,000,000)$$
$$\text{DFL} = 1.5$$

DFL Interpretation

A DFL of 1.5 means:

- A 10% increase in EBIT may increase EPS by approximately 15%
- A 10% decrease in EBIT may reduce EPS by approximately 15%

Financial leverage magnifies shareholder outcomes.

DFL and Interest Expense

As interest expense increases:

- Financial break-even rises
- DFL increases
- EPS becomes more sensitive
- Financial risk rises
- Debt-service pressure increases

DFL Near Financial Break-Even

DFL becomes extremely high when EBIT is close to interest expense.

At this point:

- Small EBIT changes create large EPS changes
- Financial risk is very high
- Losses may occur quickly

12

SECTION 12

Combined Leverage

What Is Combined Leverage?

Combined leverage reflects the joint effect of:

- Fixed operating costs
- Fixed financial costs

It measures how sensitive EPS is to changes in sales.

Degree of Combined Leverage

$$\text{DCL} = \% \Delta \text{ EPS} / \% \Delta \text{ Sales}$$

Combined-Leverage Formula

$$\text{DCL} = \text{DOL} \times \text{DFL}$$

Contribution-Based DCL

Without preferred dividends:

$$\text{DCL} = \text{Contribution Margin} / (\text{EBIT} - \text{I})$$

Combined-Leverage Example

Assume:

- $DOL = 2$
- $DFL = 1.5$

$$DCL = 2 \times 1.5$$

$$DCL = 3$$

DCL Interpretation

A DCL of 3 means:

- A 10% increase in sales may increase EPS by approximately 30%
- A 10% decline in sales may reduce EPS by approximately 30%

Total Risk

Combined leverage indicates the organization's total exposure to:

- Business risk
- Financial risk

An organization with high operating leverage should carefully assess additional debt.

Balancing Operating and Financial Leverage

Organizations with high operating risk may prefer:

- Lower debt levels
- Greater equity financing
- Flexible repayment structures
- Stronger liquidity reserves

Organizations with stable operations may be able to carry more debt.

13

SECTION 13

Earnings per Share

Earnings per Share Formula

$$\text{EPS} = ((\text{EBIT} - \text{I}) (1 - \text{T}) - \text{PD}) / \text{N}$$

- I = interest expense
- T = tax rate
- PD = preferred dividends
- N = common shares outstanding

EPS Example

Assume:

- EBIT: ETB 4 million
- Interest: ETB 1 million
- Tax rate: 30%
- No preferred dividends
- Shares: 500,000

$$\text{EPS} = (4,000,000 - 1,000,000)(0.70) / 500,000$$

$$\text{EPS} = \text{ETB } 4.20$$

14

SECTION 14

EBIT–EPS Analysis

What Is EBIT–EPS Analysis?

EBIT–EPS analysis compares the effect of alternative financing plans on earnings per share at different EBIT levels.

It helps management compare:

- Debt financing
- Equity financing
- Preferred-stock financing
- Mixed financing plans

Purpose of EBIT–EPS Analysis

The analysis identifies:

- EPS under each financing plan
- The financing-indifference point
- The effect of leverage
- Which plan performs better at different EBIT levels
- The financial risk associated with each option

Equity-Financing Plan

An equity-financing plan normally:

- Issues additional shares
- Creates no additional interest
- Increases the number of shares
- Reduces financial risk
- May dilute EPS and ownership

Debt-Financing Plan

A debt-financing plan normally:

- Creates interest expense
- Avoids issuing additional shares
- Increases financial leverage
- Increases EPS potential
- Increases financial risk

Preferred-Financing Plan

Preferred financing:

- Creates fixed dividend obligations
- Does not normally provide a tax shield
- Does not dilute common shares immediately
- Has priority over common dividends
- Increases financial leverage

15

SECTION 15

EBIT–EPS Example

Financing Scenario

A company requires ETB 5 million.

Plan A: Equity Financing

- Issue 100,000 new shares
- Existing shares: 200,000
- Total shares: 300,000
- No additional interest

Plan B: Debt Financing

- Borrow ETB 5 million at 12%
- Existing shares remain 200,000
- Annual interest: ETB 600,000

Tax rate: 30%

EPS under Equity Plan

Assume EBIT is ETB 2 million.

$$\text{EPS}_A = 2,000,000(1 - 0.30) / 300,000$$

$$\text{EPS}_A = \text{ETB } 4.67$$

EPS under Debt Plan

$$\begin{aligned}\text{EPS}_B &= (2,000,000 - 600,000)(1 - 0.30) / 200,000 \\ \text{EPS}_B &= \text{ETB } 4.90\end{aligned}$$

At this EBIT level, debt financing produces higher EPS.

Financing-Indifference Point

The indifference point is the EBIT level at which two financing plans produce equal EPS.

$$\text{EPS}_A = \text{EPS}_B$$

Indifference-Point Equation

$$\text{EBIT}(1 - T) / 300,000 = (\text{EBIT} - 600,000)(1 - T) / 200,000$$

The tax factor cancels because it is identical for both plans.

Calculate the Indifference EBIT

$$\text{EBIT} / 300,000 = (\text{EBIT} - 600,000) / 200,000$$

Solving:

$$\text{EBIT} = \text{ETB } 1,800,000$$

Interpret the Indifference Point

- If $EBIT > ETB$ 1.8 million: Debt financing produces higher EPS.
- If $EBIT < ETB$ 1.8 million: Equity financing produces higher EPS.
- At $EBIT = ETB$ 1.8 million: Both plans produce the same EPS.

Indifference EPS

$$\begin{aligned}\text{EPS} &= 1,800,000(0.70) / 300,000 \\ \text{EPS} &= \text{ETB } 4.20\end{aligned}$$

Both financing plans produce ETB 4.20 per share.

EBIT–EPS Decision Limitation

The financing plan with the highest EPS is not automatically the best.

Management must also evaluate:

- Cash-flow risk
- Default risk
- Credit rating
- WACC
- Shareholder value
- Debt capacity
- Financing flexibility

16

SECTION 16

Return on Equity and Leverage

Return on Equity

$$\text{ROE} = \left(\text{Net Income} / \text{Average Equity} \right) \times 100$$

Financial leverage may increase ROE when borrowed funds earn more than their cost.

Favorable Leverage

Leverage is favorable when:

$$\text{ROA} > \text{After-Tax Cost of Debt}$$

Debt may then increase the return earned by shareholders.

Unfavorable Leverage

Leverage is unfavorable when:

$$\text{ROA} < \text{After-Tax Cost of Debt}$$

Debt then reduces shareholder return.

Leverage Example

Assume:

- Return on assets: 16%
- After-tax cost of debt: 9%

The positive spread is:

$$16\% - 9\% = 7\%$$

Debt may improve shareholder return, subject to risk and capacity.

17

SECTION 17

Capital Structure and WACC

Capital Structure and Financing Cost

Capital structure affects the Weighted Average Cost of Capital because each financing source has a different cost.

$$WACC = w_d k_d (1 - T) + w_p k_p + w_e k_e$$

Why Debt May Reduce WACC

Debt may reduce WACC because:

- Debt is generally less risky than equity
- Lenders have priority in liquidation
- Interest may be tax deductible
- Debt holders require lower returns than shareholders

Why Excessive Debt Raises WACC

As debt increases:

- Default risk rises
- Lenders demand higher interest
- Shareholders demand higher returns
- Financial-distress costs increase
- Credit ratings may decline

Beyond a certain point, WACC may increase.

Capital Structure and Organizational Value

The value of an organization may be expressed as:

$$V = \text{Expected Free Cash Flow} / (WACC - g)$$

All else equal:

- Lower WACC increases value
- Higher WACC reduces value

Optimal Capital Structure

The optimal capital structure is the financing mix that:

- Minimizes WACC
- Maximizes organizational value
- Maintains acceptable risk
- Protects liquidity
- Preserves financial flexibility
- Supports strategic objectives

18

SECTION 18

Traditional Capital- Structure View

Traditional Approach

The traditional approach suggests that:

- Moderate debt can reduce WACC
- Debt is initially cheaper than equity
- Excessive debt increases financial risk
- An optimal debt–equity mix exists

Traditional WACC Pattern

As debt rises:

1. WACC may decline initially
2. WACC reaches a minimum point
3. WACC rises as financial risk becomes excessive

The minimum point represents the theoretical optimal structure.

19

SECTION 19

Modigliani–Miller Theory

MM Proposition without Taxes

Under perfect-market assumptions, Modigliani and Miller argued that capital structure does not affect organizational value.

Value depends on:

- Operating cash flows
- Business risk
- Investment decisions

Not on the financing mix.

Perfect-Market Assumptions

The original MM model assumes:

- No taxes
- No transaction costs
- No bankruptcy costs
- Equal borrowing rates
- Perfect information
- Rational investors
- Fixed investment policy

These assumptions rarely hold fully in practice.

MM Proposition I without Taxes

$$V_L = V_U$$

Where:

- V_L = value of a leveraged organization
- V_U = value of an unleveraged organization

Capital structure is irrelevant under the assumptions.

MM Proposition II without Taxes

As debt increases, the cost of equity increases because shareholders bear greater financial risk.

$$k_e = k_u + (k_u - k_d)(D / E)$$

The lower cost of debt is offset by the rising cost of equity.

MM with Corporate Taxes

When interest is tax deductible, debt creates a tax shield.

$$V_L = V_U + T_c D$$

Where:

- T_c = corporate tax rate
- D = debt value

Tax-Shield Value

Assume:

- Debt: ETB 20 million
- Corporate tax rate: 30%

$$\begin{aligned}\text{Tax-Shield Value} &= 0.30 \times 20 \text{ million} \\ &= \text{ETB } 6 \text{ million}\end{aligned}$$

Limitation of MM with Taxes

The tax model may suggest very high debt levels.

In practice, organizations face:

- Default risk
- Bankruptcy costs
- Agency costs
- Borrowing restrictions
- Loss of flexibility
- Operational disruption

20

SECTION 20

Trade-Off Theory

Trade-Off Theory

Trade-off theory states that organizations balance:

Benefits of Debt

- Interest tax shield
- Reduced equity dilution
- Management discipline

Costs of Debt

- Financial distress
- Bankruptcy costs
- Agency conflicts
- Reduced flexibility

Financial-Distress Costs

Financial-distress costs may include:

- Legal fees
- Restructuring costs
- Loss of customers
- Supplier restrictions
- Staff turnover
- Management distraction
- Loss of investment opportunities
- Reputational damage

Direct and Indirect Distress Costs

Direct Costs

- Legal expenses
- Court costs
- Advisory fees
- Administrative costs

Indirect Costs

- Lost sales
- Delayed projects
- Employee departures
- Supplier concerns
- Reduced credit access

21

SECTION 21

Pecking-Order Theory

Pecking-Order Theory

The pecking-order theory proposes that organizations prefer financing in this order:

1. Retained earnings
2. Debt financing
3. New equity financing

Why Internal Financing Is Preferred

Retained earnings may be preferred because they:

- Avoid flotation costs
- Avoid external scrutiny
- Reduce financing delays
- Avoid ownership dilution
- Reduce information problems

Why Debt May Be Preferred to New Equity

Debt may be preferred because:

- It causes less ownership dilution
- Its cost is more predictable
- Interest may be tax deductible
- Issuing equity may signal overvaluation
- Equity issuance may be expensive

Information Asymmetry

Information asymmetry occurs when managers know more about the organization than outside investors.

This may affect:

- Share prices
- Financing choices
- Investor confidence
- Market interpretation
- Cost of capital

22

SECTION 22

Signaling Theory

Financing as a Signal

Financing decisions may send signals to investors.

Issuing Debt May Signal

Management expects sufficient future cash flow.

Issuing New Equity May Signal

Management believes shares are highly valued or debt capacity is limited.

Signals are not always accurate.

23

SECTION 23

Agency Theory

Agency Conflicts

Agency conflicts may occur between:

- Managers and shareholders
- Shareholders and lenders
- Majority and minority shareholders

Capital structure can influence these conflicts.

Debt as a Disciplinary Mechanism

Debt may reduce unnecessary managerial spending by requiring regular cash payments.

However, excessive debt may encourage:

- High-risk projects
- Underinvestment
- Asset substitution
- Manipulation of financial information

Shareholder-Lender Conflict

Shareholders may prefer high-risk projects because:

- Shareholders receive most of the upside
- Lenders bear significant downside risk
- Debt payments are fixed

Lenders respond with covenants and higher interest rates.

24

SECTION 24

Market-Timing Theory

Market-Timing Theory

Market-timing theory suggests that organizations issue:

- Equity when share prices are considered high
- Debt when interest rates are favorable
- Debt securities when credit markets are strong
- Long-term debt when future rates may rise

Limitation of Market Timing

Market timing is difficult because:

- Interest rates are uncertain
- Share prices may change unexpectedly
- Financing windows may close
- Short-term timing may conflict with long-term strategy

25

SECTION 25

Factors Affecting Capital Structure

Major Decision Factors

Capital-structure decisions are influenced by:

- Business risk
- Profitability
- Cash-flow stability
- Asset structure
- Growth opportunities
- Tax position
- Control considerations
- Credit rating
- Market conditions
- Financial flexibility

Business Risk

Organizations with high business risk may prefer lower debt because operating income is already uncertain.

Stable businesses may support higher debt levels.

Cash-Flow Stability

Stable and predictable cash flows improve the ability to:

- Pay interest
- Repay principal
- Meet covenants
- Refinance debt
- Maintain credit quality

Asset Structure

Organizations with tangible assets may obtain more debt because assets can provide collateral.

Organizations dominated by intangible assets may have lower borrowing capacity.

Profitability

Highly profitable organizations may:

- Use retained earnings
- Require less external financing
- Maintain lower debt
- Or use debt to benefit from tax shields

The effect depends on financing strategy.

Growth Opportunities

High-growth organizations require substantial capital but may avoid excessive debt because:

- Cash flows are uncertain
- Investment needs are continuous
- Financial flexibility is valuable
- Distress could destroy growth opportunities

Tax Position

Debt is more attractive when:

- The organization earns taxable profit
- Interest is deductible
- The tax shield can be used
- Tax rules are stable

Organizations with losses may receive limited immediate tax benefits.

Control Considerations

Issuing new common shares may:

- Dilute existing ownership
- Reduce voting control
- Introduce new shareholders
- Change governance arrangements

Debt may preserve control but increase fixed obligations.

Market Conditions

Financing choices may depend on:

- Interest rates
- Share-market valuations
- Investor demand
- Inflation
- Credit availability
- Exchange rates
- Economic conditions

Financial Flexibility

Financial flexibility is the ability to obtain financing when needed.

It is supported by:

- Moderate debt
- Strong liquidity
- Good credit history
- Unused borrowing capacity
- Diverse financing sources
- Strong investor relationships

Industry Comparisons

Capital structure should be compared with organizations having similar:

- Business models
- Asset structures
- Risk levels
- Growth opportunities
- Cash-flow patterns
- Regulatory environments

Industry averages are guides, not automatic targets.

26

SECTION 26

Target Capital Structure

What Is a Target Capital Structure?

A target capital structure is the long-term financing mix that management intends to maintain.

It may specify:

- Maximum debt ratio
- Target debt-to-equity ratio
- Minimum interest coverage
- Preferred financing sources
- Acceptable credit rating

Target Structure Example

An organization may establish:

- Debt: 40%
- Preferred stock: 10%
- Common equity: 50%

Future financing decisions should gradually maintain or restore this mix.

Capital-Structure Range

The target need not be one exact percentage.

Management may use an acceptable range, such as:

- Debt: 30%-40%
- Equity: 60%-70%

This allows flexibility as market conditions change.

27

SECTION 27

Capital Structure in Different Organizations

Capital Structure of a Start-Up

Start-ups may rely more on:

- Founder equity
- Venture capital
- Grants
- Convertible financing
- Limited debt

Their uncertain cash flows reduce debt capacity.

Capital Structure of a Mature Company

Mature companies may have:

- Stable cash flows
- Strong collateral
- Predictable earnings
- Higher debt capacity
- Regular dividend policies
- Better access to bond markets

Capital Structure of an NGO

An NGO may finance long-term assets through:

- Restricted donor funding
- Unrestricted reserves
- Grants
- Concessional loans
- Lease financing
- Institutional contributions

Debt capacity depends on predictable unrestricted income.

Capital Structure of a Project

Project financing may rely on:

- Sponsor equity
- Bank loans
- Development-finance institutions
- Lease financing
- Government support
- Supplier credit

Lenders often depend on project cash flows for repayment.

28

SECTION 28

Capital-Structure Risk Assessment

Financing Risk Indicators

Warning indicators include:

- Falling interest coverage
- Increasing debt-to-equity ratio
- Repeated covenant breaches
- High short-term refinancing needs
- Foreign-currency mismatch
- Declining cash flow
- Long-outstanding debt
- Excessive collateral commitments

Stress Testing Capital Structure

Capital structure should be tested under:

- Revenue decline
- Cost increase
- Interest-rate increase
- Currency depreciation
- Delayed project completion
- Loss of a major customer
- Reduced donor funding
- Economic recession

Debt-Capacity Analysis

Debt capacity depends on:

- Operating cash flow
- Debt-service coverage
- Interest coverage
- Collateral
- Existing debt
- Project risk
- Loan maturity
- Currency exposure
- Financial flexibility

Practical Exercise

Evaluate Alternative Financing Plans

Participants will:

- Calculate operating break-even
- Calculate DOL
- Calculate DFL
- Calculate DCL
- Calculate EPS under alternative plans
- Determine the indifference point
- Assess financing risks
- Recommend an appropriate capital structure

Exercise Scenario — Operations

A company has:

- Selling price: ETB 200 per unit
- Variable cost: ETB 120 per unit
- Fixed operating costs: ETB 4 million
- Expected sales: 80,000 units

Calculate Contribution Margin

Contribution per unit:

$$200 - 120 = \text{ETB } 80$$

Total contribution:

$$\begin{aligned} & 80,000 \times 80 \\ & = \text{ETB } 6,400,000 \end{aligned}$$

Calculate EBIT

$$\text{EBIT} = 6,400,000 - 4,000,000$$

$$\text{EBIT} = \text{ETB } 2,400,000$$

Calculate Operating Break-Even

$$\begin{aligned} Q_{BE} &= 4,000,000 / (200 - 120) \\ Q_{BE} &= 50,000 \text{ units} \end{aligned}$$

Calculate DOL

$$\text{DOL} = 6,400,000 / 2,400,000$$

$$\text{DOL} = 2.67$$

Exercise Financing Information

The company has:

- Interest expense: ETB 600,000
- Tax rate: 30%
- Common shares: 300,000
- No preferred shares

Calculate DFL

$$\text{DFL} = 2,400,000 / (2,400,000 - 600,000)$$

$$\text{DFL} = 1.33$$

Calculate DCL

$$\text{DCL} = 2.67 \times 1.33$$

$$\text{DCL} \approx 3.55$$

Interpret Combined Leverage

A 10% change in sales may produce approximately:

$$3.55 \times 10\% = 35.5\%$$

change in EPS in the same direction.

Calculate Current EPS

$$\text{EPS} = (2,400,000 - 600,000)(0.70) / 300,000$$

$$\text{EPS} = \text{ETB } 4.20$$

Stress-Test Scenario

Assume sales decline by 15%.

Using DCL:

$$\begin{aligned}\% \Delta \text{ EPS} &= 3.55 \times (-15\%) \\ &= -53.25\%\end{aligned}$$

Estimated EPS:

$$\begin{aligned}4.20(1 - 0.5325) \\ \approx \text{ETB } 1.96\end{aligned}$$

Risk Interpretation

The company has:

- Significant operating leverage
- Additional financial leverage
- High sensitivity of EPS to sales
- Limited protection against a large sales decline

Additional debt should be evaluated carefully.

Group Assignment

Each group should recommend:

1. Appropriate debt ratio
2. Minimum interest-coverage ratio
3. Suitable financing source
4. Risk-mitigation measures
5. Conditions for taking additional debt
6. Monitoring indicators
7. Final financing recommendation

Common Capital-Structure Mistakes

- Using debt only because it is cheaper
- Ignoring financial-distress costs
- Focusing only on EPS
- Ignoring cash-flow capacity
- Using book values without justification
- Ignoring foreign-currency risk
- Failing to stress-test debt service
- Treating retained earnings as free
- Ignoring ownership dilution
- Applying one structure to every organization

Capital-Structure Checklist

Before selecting a financing mix, assess:

- Financing requirement
- Business risk
- Cash-flow stability
- Debt-service capacity
- Interest coverage
- Asset collateral
- Tax position
- Ownership implications
- Credit rating
- Market conditions
- Financial flexibility
- WACC
- Stress-test results

Knowledge Check

1. What is capital structure?
2. How does it differ from financial structure?
3. What is operating leverage?
4. What creates financial leverage?
5. What does DOL measure?
6. What does DFL measure?
7. What does DCL measure?
8. What is the EBIT–EPS indifference point?
9. What is an optimal capital structure?
10. What does trade-off theory explain?

Knowledge Check Answers

1. The mix of long-term debt and equity financing
2. Financial structure also includes short-term liabilities
3. The effect of fixed operating costs on EBIT
4. Fixed financial obligations such as interest
5. The sensitivity of EBIT to sales changes
6. The sensitivity of EPS to EBIT changes
7. The sensitivity of EPS to sales changes
8. The EBIT level at which financing plans produce equal EPS
9. The mix that minimizes WACC and maximizes value at acceptable risk
10. The balance between debt benefits and financial-distress costs

Action Plan

Evaluate your organization's current capital structure by identifying:

- Long-term debt
- Equity
- Debt-to-equity ratio
- Interest-coverage ratio
- Debt-service coverage
- Fixed operating costs
- Operating leverage
- Financial leverage
- Major financing risks
- Target capital structure
- Recommended corrective action

Chapter Summary

- Capital structure is the mix of long-term financing sources.
- Debt provides tax and ownership benefits but creates fixed obligations.
- Equity provides flexibility but may be more expensive.
- Business risk arises from operating activities.
- Financial risk arises from fixed financing commitments.
- Operating leverage magnifies the effect of sales changes on EBIT.
- Financial leverage magnifies the effect of EBIT changes on EPS.
- Combined leverage measures the total effect of sales changes on EPS.
- EBIT–EPS analysis compares financing alternatives.
- The financing-indifference point identifies equal EPS outcomes.
- Moderate debt may reduce WACC.
- Excessive debt increases financial-distress risk.
- Optimal capital structure balances financing cost, risk and flexibility.

Key Message

Capital structure is not simply a choice between debt and equity.

It is a strategic decision that connects:

**Business Risk → Fixed Costs → Debt Capacity →
Financing Cost → Shareholder Return → Financial
Flexibility → Organizational Value**

THANK YOU

Questions and Discussion

Dr Abenet Yohannes, Ph.D

abenetyohannes@gmail.com

An effective capital structure does not seek the highest possible debt or the lowest immediate financing cost. It balances risk, return, control, liquidity and flexibility so that the organization can finance growth while remaining resilient and financially sustainable.

Follow: Dr Abenet Yohannes, Ph.D. for more contents