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## Pre-Learning Material: Cost of Capital

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### 1. Introduction to Cost of Capital

#### 1.1 What Is Cost of Capital?

The **cost of capital** represents the **minimum required rate of return** that a firm must earn on its investments in order to satisfy its providers of capital—namely, **debt holders, preference shareholders, and equity shareholders**. Economically, it is the firm's **opportunity cost of funds**, reflecting what investors could earn elsewhere on investments of similar risk.

From a corporate finance perspective, the cost of capital is not an accounting expense recorded in financial statements. Instead, it is a **benchmark rate** used to evaluate decisions. If a firm undertakes a project that earns a return lower than its cost of capital, the project destroys value even if it reports accounting profits. Conversely, projects that earn returns exceeding the cost of capital create shareholder value.

Thus, cost of capital serves as:

- A **required return** for investors
- A **discount rate** for valuation
- A **hurdle rate** for capital budgeting

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#### 1.2 Why Cost of Capital Matters

Cost of capital plays a central role in several key financial decisions:

##### 1. Capital Budgeting

Investment proposals are evaluated by comparing expected project returns with the firm's cost of capital. Only projects expected to earn returns above this benchmark should be accepted.

##### 2. Valuation

In discounted cash flow (DCF) valuation, future cash flows are discounted using the cost of capital to determine firm or project value.

##### 3. Financing Decisions

The choice between debt, equity, and hybrid instruments affects the overall cost of capital and, therefore, firm value.

Importantly, cost of capital links **risk and return**. Firms with riskier operations or volatile cash flows face higher required returns from investors, leading to a higher cost of capital.

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### 1.3 Cost of Capital in Corporate Decision-Making

Managers use cost of capital as a **decision benchmark**, not as a forecast. It represents investor expectations, not guaranteed outcomes. Key applications include:

- Evaluating expansion projects
- Assessing mergers and acquisitions
- Designing optimal capital structures
- Measuring economic performance

Understanding cost of capital ensures that managerial decisions are aligned with **shareholder wealth maximization**.

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## 2. Components of Cost of Capital

### 2.1 Overview of Capital Components

A firm typically finances its assets using a combination of:

- **Debt**
- **Preference shares**
- **Equity**

Each source has a distinct cost, reflecting its risk profile and contractual characteristics. The firm's overall cost of capital is a **weighted average** of these component costs.

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### 2.2 Cost of Debt

The **cost of debt** is the effective rate that a firm pays on its borrowed funds. Unlike equity, debt has contractually fixed payments in the form of interest and principal repayment.

Key distinctions include:

- **Coupon rate vs cost of debt:** The coupon rate is stated on the bond, but the true cost is the **yield to maturity**, which considers market price, maturity, and redemption value.
- **Before-tax vs after-tax cost:** Interest is tax-deductible, reducing the effective cost of debt.

The after-tax cost of debt reflects the **tax shield benefit**, making debt generally cheaper than equity.

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## 2.3 Cost of Preference Shares

Preference shares occupy a hybrid position between debt and equity. They typically pay a **fixed dividend**, but unlike interest, preference dividends are **not tax-deductible**.

Key features:

- Fixed dividend obligation
- Priority over equity in dividends and liquidation
- No voting rights (usually)

The cost of preference capital is computed as the ratio of annual dividend to net proceeds from issue.

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## 2.4 Cost of Equity

The **cost of equity** is the most complex and critical component of cost of capital. Equity investors are residual claimants and bear the highest risk. As a result, they demand the highest return.

Unlike debt or preference shares:

- Equity has no fixed payments
- Returns depend on firm performance and market conditions
- Cost of equity must be **estimated**, not observed

This estimation challenge leads to multiple models for equity cost measurement.

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## 3. Equity Cost Estimation Approaches

### 3.1 Dividend Growth (Gordon Growth) Model

The dividend growth model estimates the cost of equity based on:

- Expected dividend
- Growth rate of dividends
- Current market price

The intuition is simple: investors earn returns through **dividends and capital appreciation**. The model assumes:

- Constant growth rate
- Stable dividend payout policy

- Mature, dividend-paying firms

While conceptually elegant, the model is sensitive to growth assumptions and unsuitable for firms with irregular dividends.

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### 3.2 Cost of Equity from Retained Earnings

Retained earnings represent profits reinvested in the firm rather than distributed as dividends. Although retained earnings do not involve explicit issuance costs, they are **not free**.

The opportunity cost principle applies: shareholders could have received these earnings as dividends and invested them elsewhere at the cost of equity. Therefore, the cost of retained earnings is equal to the cost of equity estimated using appropriate models.

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### 3.3 Cost of New Equity

When firms issue new equity, they incur **flotation costs** such as underwriting fees and administrative expenses. These costs reduce net proceeds received by the firm.

As a result:

- The effective cost of new equity is higher than that of retained earnings
- Issuing equity becomes progressively expensive

This distinction is crucial when evaluating financing strategies.

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### 3.4 Capital Asset Pricing Model (CAPM)

CAPM estimates cost of equity based on **systematic risk**, measured by beta.

Key components:

- Risk-free rate
- Market risk premium
- Beta (sensitivity to market movements)

CAPM assumes diversified investors who care only about market risk. It is widely used due to its intuitive link between risk and return, though it relies on strong assumptions.

## 4. Growth, Payout, and Market Assumptions

### 4.1 Earnings, Dividends, and Growth

Growth in dividends and earnings is driven by:

- Retention ratio
- Return on reinvested earnings

A higher payout ratio generally reduces growth but increases current dividends. Firms must balance investor income needs and reinvestment opportunities.

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### 4.2 Sustainable Growth Logic

Sustainable growth reflects how fast a firm can grow without altering its financial leverage. It depends on internal profitability and retention policies.

Understanding growth mechanics is essential for applying dividend-based equity valuation models correctly.

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### 4.3 Market Inputs and Their Meaning

Market prices of shares and bonds reflect:

- Investor risk perceptions
- Growth expectations
- Market conditions

Using market values in cost of capital calculations aligns estimates with **current investor expectations** rather than historical accounting values.

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## 5. Debt Instruments and Cash Flow Structure

### 5.1 Bond Fundamentals

Key bond features include:

- Face value
- Coupon rate
- Maturity
- Issue and redemption price

These features determine the bond's cash flow pattern.

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## 5.2 Coupon Frequency and Its Implications

Interest payments may be annual, semi-annual, or quarterly. Higher frequency:

- Increases compounding
  - Affects yield calculations
  - Must be handled carefully to avoid errors
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## 5.3 Redemption Premiums and Discounts

Bonds may be redeemed at a premium or discount relative to face value. These affect the effective cost of debt and must be incorporated into yield estimation.

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## 5.4 Flotation Costs

Flotation costs reduce net proceeds from financing instruments. Ignoring them understates the true cost of capital and leads to incorrect investment decisions.

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# 6. Weighted Average Cost of Capital (WACC)

## 6.1 Concept of WACC

WACC represents the **average required return** across all sources of financing, weighted by their proportion in the firm's capital structure.

It is used as:

- A discount rate
  - A performance benchmark
  - A decision hurdle
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## 6.2 Capital Structure Weights

Weights reflect the relative contribution of each financing source. They may be based on:

- Book values
- Market values

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### 6.3 Book Value vs Market Value Weights

Book values reflect historical costs, while market values reflect current investor expectations. For valuation and decision-making, market values are generally preferred.

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### 6.4 Interpreting WACC

A lower WACC indicates cheaper financing and higher firm value, assuming risk is unchanged. However, lowering WACC by excessive debt increases financial risk.

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## 7. Common Conceptual Errors Students Make

### 7.1 Equity-Related Errors

- Treating dividends as cost of equity
- Ignoring growth assumptions
- Misinterpreting beta

### 7.2 Debt-Related Errors

- Using coupon rate instead of yield
- Ignoring tax effects
- Mishandling payment frequency

### 7.3 WACC-Related Errors

- Mixing inconsistent weights
  - Double-counting tax benefits
  - Treating WACC as a guaranteed return
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## 8. Conceptual Readiness Checklist (Before Excel)

Students should clearly understand:

- Why cost of capital reflects required return
- Why multiple equity models exist
- How taxes affect financing costs

- How capital structure influences WACC
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## 9. Transition to Excel Model Building

### 9.1 How Concepts Map to Excel Models

In Excel:

- Inputs represent assumptions
  - Formulas represent financial logic
  - Outputs require interpretation
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### 9.2 What Excel Will Do (and Will Not)

Excel automates calculations but cannot judge economic validity. Conceptual understanding is essential for validating outputs.

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### 9.3 Expectations from the Upcoming Excel Lab

Students are expected to:

- Build component costs step-by-step
  - Apply consistent assumptions
  - Interpret alternative WACC estimates
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