

COST OF CAPITAL

Every rupee/dollar a business uses **belongs to someone**:

- If borrowed → it belongs to **lenders** (banks, debenture holders).
- If raised through equity → it belongs to **shareholders**.
- If retained → it still belongs to shareholders (they could have taken dividends and invested elsewhere).

Therefore, all providers expect a return.

That expected return = **Cost of Capital** for the company.

The company **invests** this money in projects.

- If project return > cost of capital → wealth increases 
- If project return < cost of capital → wealth decreases 

Before deciding the capital structure, the finance manager needs to know the **cost of each source of finance**:

1. **Cost of Debt (Kd)** → interest expense adjusted for tax.
2. **Cost of Preference Shares (Kp)** → fixed dividend obligation.
3. **Cost of Equity (Ke)** → expected return by shareholders (can be estimated using models like Dividend Discount Model or CAPM).
4. **Cost of Retained Earnings (Kr)** → opportunity cost of reinvested profits (similar to cost of equity).

1. Cost of Debt (Kd)

- Logic: Lenders charge **interest**.
- But interest is **tax-deductible** (reduces taxable income).
- So the **effective cost of debt** = $\text{interest} \times (1 - \text{tax rate})$.
Debt is usually the **cheapest** source of capital because of this tax shield.

2. Cost of Preference Shares (Kp)

- Preference shareholders get a **fixed dividend** (like interest, but not tax-deductible).
- They have **priority** over equity but no voting rights.

- Since dividends are not tax-deductible, the cost is just: $\text{dividend} \div \text{price}$.

Cost of preference shares is usually **higher than debt** (no tax shield) but lower than equity (less risky for investors)

3. Cost of Equity (Ke)

- Equity shareholders are **owners**. They don't get fixed payments, but expect **returns (dividends + capital gains)**.
- Their cost is the **hardest to estimate**, because it's about what investors expect.
- Common approaches:
 - **Dividend Discount Model (DDM):** $K_e = (\text{Dividend} \div \text{Price}) + \text{Growth}$.
 - **CAPM (Capital Asset Pricing Model):** $K_e = \text{Risk-free rate} + \text{Beta} \times (\text{Market return} - \text{Risk-free})$.

Equity is **most expensive**, because it carries the highest risk

4. Cost of Retained Earnings (Kr)

- Retained earnings = profits kept instead of paying dividends.
- Shareholders could have taken that dividend and invested elsewhere.
- So cost of retained earnings = **opportunity cost** (same as K_e , but adjusted for factors like flotation cost, tax).

Combining → Overall Cost (WACC)

- A company usually uses a **mix**: debt + preference + equity.
- So we can't just look at one cost. We need **Weighted Average Cost of Capital (WACC)**.
- $\text{WACC} = \text{Weighted average of all sources (each weighted by its share in total capital)}$.

This WACC becomes the **discount rate** in capital budgeting.

Significance

1. **Evaluation of Investment options:** Used to evaluate projects (NPV, IRR).
2. **Financing Decisions:** Helps choose the cheapest and safest source of funds.
3. **Credit Policy Decisions:** Compare cost vs. benefit of giving credit to customers.

COST OF LONG-TERM DEBT (KD)

When a company borrows money from **lenders** (banks, institutions, debenture holders, bondholders), it raises **debt capital**. In return, the company promises to pay:

1. Fixed interest (called coupon), and
2. Repayment of principal (redemption) at maturity.

cost of debt = effective return expected by lenders, adjusted for tax benefit.

Features of Debentures/Bonds

1. **Face Value (FV):**
 - Nominal value written on debenture, e.g., ₹100.
 - Interest (coupon) is always calculated on **face value**, not on market value.
2. **Interest (Coupon) Rate (I):**
 - Fixed % applied to **face value**.
 - E.g., 9% debenture of ₹100 → annual interest = ₹9.
3. **Maturity Period:**
 - Most debentures are **redeemable** (paid back after a fixed time).
 - **Irredeemable** = no maturity, treated as perpetual.
4. **Redemption Value (RV):**
 - The amount repaid at maturity.
 - Can be at **par (same as face value)**, at **premium (higher than FV)**, or at **discount (lower than FV)**.
5. **Tax Shield:**
 - **Very important!**
 - Interest on debt is a **deductible expense** for tax purposes.

EBIT (Earnings before Interest & Tax) = ₹1,000 Interest paid = ₹200 Tax rate = 30%

Case 1: No Debt

Taxable income = 1,000

Tax (30%) = 300

Net income = 700

Case 2: With Debt

EBIT = 1,000

Interest = 200 (deductible)

Taxable income = 800

Tax (30%) = 240

Net income = 560

But we must also pay interest (200) → total income left for shareholders = 360

Observe:

Company paid **200 interest** to lenders,

But **saved 60 tax** (300 – 240).

So the **net cost of debt = 200 – 60 = 140**.

✓ **This is why debt is cheaper** than equity → because of the **tax shield benefit**.

$K_d = \text{Coupon rate} \times (1 - \text{Tax rate})$

Icai illustrations

1. A company issued 10,000, 10% debentures of ₹ 100 each at a premium of 10% on 1.4.2023 to be matured on 1.4.2028. The debentures will be redeemed on maturity. COMPUTE the cost of debentures assuming 35% as tax rate.
2. A company issued 10,000, 10% debentures of ₹ 100 each at par on 1.4.2018 to be matured on 1.4.2028. The company wants to know the cost of its existing debt on 1.4.2023 when the market price of the debentures is ₹ 80. COMPUTE the cost of existing debentures assuming 35% tax rate.

Cost of convertible debentures

- Normally, a debenture is **redeemed in cash** (say ₹100 per debenture).
- But in **convertible debentures**, investors get a **choice** at maturity:
 1. **Take cash (face value / redemption price)**, OR
 2. **Convert into shares of the company** (fixed number of shares per debenture).

Naturally, investors will pick whichever option gives them **more value**

A company issued 10,000, 15% Convertible debentures of ₹100 each with a maturity period of 5 years. At maturity, the debenture holders will have an option to convert the debentures into equity shares of the company in the ratio of 1:10 (10 shares for each debenture). The current market price of the equity shares is ₹12 each and historically the growth rate of the shares is 5% per annum. Compute the cost of debentures assuming 35% tax rate.

$$\text{Future Price per Share} = \text{Current Price} \times (1+g)^n$$

Cost of Preference Share Capital (Kp)

What are Preference Shares?

They carry a **fixed dividend rate** (like 10%, 12% etc. on face value).

Preference shareholders get their dividend **before equity shareholders**, but **after debt holders**.

Dividend is **not compulsory** – if company has no profits, it may skip.

Tax Treatment

Interest on debt → considered an **expense**, reduces taxable profit.

Preference dividend → is **NOT an expense**, it comes from **profit after tax**.

So, **no tax shield** for company.

$$K_p = \frac{\text{Annual Dividend}}{\text{Net Proceeds}} \qquad K_p = \frac{D + \frac{RV - NP}{n}}{\frac{RV + NP}{2}}$$

Cost of Equity (KE)

Cost of equity = **return expected by equity shareholders** for investing in the company.

Equity holders are **owners** and take the highest risk → so their expected return (Ke) is usually the highest among all sources of finance

- Even though a company doesn't "pay" fixed interest/dividend to equity holders, shareholders still expect a return (through **dividends + capital appreciation**).
- If a company cannot provide at least this expected return, shareholders may sell their shares, lowering share price and harming the company's value.

For **debentures / preference shares**, cost is straightforward because **interest/dividend is fixed**.

For **equity**, return is **uncertain** and depends on:

- Dividend policy,
- Growth in earnings,
- Market price of shares,
- Risk perception of investors.

👉 That's why there is **not a single formula** for K_e . Instead, we use different approaches depending on the situation.

Major Approaches to Calculate K_e

1. Dividend Price Approach (D/P Model)

- If dividends are expected to remain constant:

$$K_e = \frac{D}{P_0}$$

where D = dividend per share, P_0 = current market price.

Earnings Price Approach (E/P Model)

- If earnings are stable and company retains some portion:

$$K_e = \text{EPS} / \text{MPS}$$

Dividend Growth Approach (Gordon's Model)

- If dividends grow at a constant rate g :

$$Ke = \frac{D_1}{P_0} + g$$

where D_1 = expected dividend next year.

GROWTH RATE = RETURN ON INVESTMENT X RETENTION RATIO

RETENTION RATIO = 1- PAYOUT RATIO

CAPM (Capital Asset Pricing Model)

- If shareholder expectations depend mainly on **risk**, use CAPM:

$$Ke = R_f + \beta(R_m - R_f)$$

where:

- R_f = risk-free rate (e.g., govt. bonds),
- R_m = expected market return,
- β = risk measure of company's stock relative to market.

$(R_m - R_f)$ IS THE RISK PREMIUM

equity return is uncertain, unlike fixed-interest securities. So, depending on available information (dividend, earnings, growth, past trends, risk), we select the most suitable method.

COST OF RETAINED EARNINGS (KR)

What are retained earnings?

- Profits earned by the company but not distributed as dividends.
- Instead, these are reinvested in the business.

Why do they have a cost?

- If company had distributed profits as dividends, shareholders could have invested that money elsewhere (e.g., in other stocks, bonds, etc.) and earned a return.

- By retaining earnings, company denies them that opportunity.

So, **cost of retained earnings = opportunity cost of dividends foregone by shareholders.**

Retained earnings belong to equity shareholders → so K_r is **closely linked with K_e .**

But AT TIMES **$K_e > K_r$** , because:

- When company issues new equity, it suffers **flotation cost** (underwriting, brokerage, etc.), which makes equity more expensive.
- Retained earnings have **no flotation cost**, so they are slightly cheaper.
- Dividends received by shareholders are **taxable in their hands**.
→ If the company retains earnings, shareholders avoid this tax.
→ So, the **effective opportunity cost is lower**, because shareholders don't lose the after-tax dividend, they lose the net amount.

👉 That means **K_r must be adjusted downward** when personal taxes apply.

- K_e = Cost of equity (before personal tax adjustment)
- t_p = Personal tax rate of shareholders

Then:

$$K_r = K_e \times (1 - t_p)$$

◆ Example

Suppose:

- Cost of equity (K_e) = 12%
- Personal tax rate = 30%

$$K_r = 12\% \times (1 - 0.30) = 12\% \times 0.70 = 8.4\%$$

✅ So, when personal tax is considered, the cost of retained earnings becomes **lower** than cost of equity

WEIGHTED AVERAGE COST OF CAPITAL

What is WACC?

- It is the **average cost of capital** a company pays for raising finance from all sources (Equity, Preference Shares, Debentures, Loans, Retained Earnings, etc.).
- Each source has its own cost (K_e , K_p , K_d , K_r).

Why “Weighted”?

- Because not all sources are used equally.
- A company may raise 70% from equity and 30% from debt → so weights are applied according to proportion in **capital structure**.

✓ In short

- ✓ WACC = **average minimum return** company must earn to satisfy all providers of capital.
- ✓ It balances **risk, cost, and control**.
- ✓ It is the **benchmark rate** for project evaluation

What WACC Represents?

- a. **Overall minimum return** a company must earn on its investments to satisfy all investors (creditors, shareholders, preference holders).
- b. If company earns less than WACC → value is destroyed.
- c. If company earns more than WACC → value is created.

Example for Clarity

- Suppose company's WACC = **11%**
- Project earns = **20%**
👉 Since 20% > 11%, project creates value → investors happy.
- If project earns only **9%** while WACC = 11%
👉 Company is destroying value → investors better invest elsewhere.

Sources of Funds → Individual Costs → Weighted Average (WACC) → Decision Making (Accept/Reject Project)

choice between Book Value (BV) and Market Value (MV) weights

1. Book Value (BV) Weights

- Based on accounting records (balance sheet values).
- Includes:
 - Share capital (nominal value)
 - Share premium
 - Reserves & surplus (retained earnings).
- **Advantages:**
 - Easy to obtain (from balance sheet).
 - Convenient for calculation.
- **Disadvantages:**
 - Does **not reflect true current value** of securities.
 - Ignores future prospects and market conditions.

2. Market Value (MV) Weights

- Based on **current market prices** of shares, debt, etc.
- Reflects what investors are willing to pay now → **true economic value**.
- **Advantages:**
 - More realistic.
 - Reflects changing market conditions.
- **Disadvantages:**
 - Market prices fluctuate daily → may be difficult to use for stability.

👉 Therefore, **MV is theoretically better**, while **BV is practically easier**.

Retained Earnings and Market Value

Retained earnings don't have a separate "market value."

- When a company retains profits, it increases the company's **net worth**.
- This **increases the value of equity shares** in the market.
- But stock market doesn't say:
 - "This much value = paid-up equity"
 - "This much value = retained earnings."

- Instead, **both are combined** inside the **market value of equity shares**.

👉 That's why we say: **retained earnings have no separate market value**.

We still need **separate weights** for equity capital and retained earnings because IN SOME CASES

- Cost of equity (K_e) $\neq$ Cost of retained earnings (K_r).
- So we cannot just lump them together.

✅ Solution:

Take the **total Market Value of Equity** and split it between *Equity Capital* and *Retained Earnings* in the **same ratio as their Book Values**.

Suppose:

- **Book Values:**
 - Paid-up Equity Capital = ₹40,000
 - Retained Earnings = ₹60,000
 - Total = ₹1,00,000
- **Market Value of Equity Shares** ($P_0 \times \text{no. of shares}$) = ₹2,00,000

Now we split the ₹2,00,000 MV between equity and retained earnings:

- Equity Capital share = $200000 \times \frac{40000}{100000} = ₹80,000$
- Retained Earnings share = $200000 \times \frac{60000}{100000} = ₹120,000$

So for WACC weights:

- Equity Capital = ₹80,000
- Retained Earnings = ₹120,000

Marginal Cost of Capital

- MCC = Cost of raising one more rupee of capital (i.e., additional/new funds).
- It is not about the past (already raised funds), but about the future funds to be raised.

2. Relation with Average Cost of Capital (WACC)

- WACC = overall average cost of all funds (past + new).
- MCC = cost of new funds only.

It is calculated just like WACC, but instead of book value or market value weights, we use **marginal weights**.

Example: Company plans to raise ₹100 crore → 60% debt, 40% equity → weights = 0.6 and 0.4. 👉 That's why no debate of "Book Value vs Market Value" arises in MCC.