



B.Com Honours

Semester VI

Calicut University

# FINANCIAL MANAGEMENT

Course Code: COM6EJ302 • Module 3 Notes

# Module III: TVM, Cost of Capital, Leverage, & Capital Budgeting

Covers time value of money, CAPM model, cost of capital (WACC), operating & financial leverage, and capital budgeting evaluation techniques (Payback, NPV, IRR, PI).

## Unit 3.1: Time Value of Money Concepts

**TVM Principle:** A rupee received today is worth more than a rupee received tomorrow due to interest earning capacity, inflation, & risk.

## Unit 3.2: Compounding & Present Value Techniques

Formulae:  $\text{FV}_n = \text{PV} \times (1 + r)^n$ ;  $\text{PV} = \frac{\text{FV}_n}{(1 + r)^n}$ . Annuity Present Value:  $\text{PVA} = A \times \left[ \frac{1 - (1 + r)^{-n}}{r} \right]$ .

## Unit 3.3: Risk and Return & CAPM Model

**Capital Asset Pricing Model (CAPM):**

$$k_e = R_f + \beta \cdot (R_m - R_f)$$

where  $R_f$  is Risk-Free Rate,  $\beta$  is Beta systematic risk, &  $R_m$  is Market Return.

## Unit 3.4: Cost of Capital & WACC Calculation

Weighted Average Cost of Capital ( $k_o$ ): Weighted sum of individual capital costs ( $k_d(1-t)$ ,  $k_p$ ,  $k_e$ ).

## Unit 3.5: Leverage Analysis (DOL, DFL, DCL)

**1. Degree of Operating Leverage (DOL):**  $\text{DOL} = \frac{\text{Contribution}}{\text{EBIT}}$ .

**2. Degree of Financial Leverage (DFL):**  $\text{DFL} = \frac{\text{EBIT}}{\text{EBT} - \text{Preference Dividend}}$ .

**3. Combined Leverage (DCL):**  $\text{DCL} = \text{DOL} \times \text{DFL} = \frac{\text{Contribution}}{\text{EBT}}$ .

## Unit 3.6: Capital Budgeting Evaluation Techniques

Discounted Techniques:

- **Net Present Value (NPV):**  $\text{NPV} = \sum \frac{\text{CF}_t}{(1 + k)^t} - I_0$ . Accept if  $\text{NPV} > 0$ .

- **Profitability Index (PI):**  $\text{PI} = \frac{\text{PV of Cash Inflows}}{\text{Initial Outlay}}$ . Accept if  $\text{PI} > 1.0$ .

**Practical Solved Problem 1 (Leverage Analysis - DOL, DFL, DCL):** Company Sales = ₹20,00,000 (1,00,000 units @ ₹20). Variable Cost = ₹12 per unit. Fixed Operating Costs = ₹4,00,000. 10% Debentures = ₹10,00,000. Tax Rate

= 30%. Calculate DOL, DFL, and DCL.

**Contribution = Sales - VC; EBIT = Contribution - Fixed Costs; EBT = EBIT - Interest**

**Step-by-step Solution:**

1. Contribution = \$ 20,00,000 - (1,00,000  $\times$  12) = 20,00,000 - 12,00,000 =  $\mathbf{\text{₹}8,00,000}$  \$.
2. EBIT = \$ 8,00,000 - 4,00,000 =  $\mathbf{\text{₹}4,00,000}$  \$.
3. Interest Expense = \$ 10,00,000  $\times$  10% =  $\mathbf{\text{₹}1,00,000}$   $\implies \text{EBT} = 4,00,000 - 1,00,000 = \mathbf{\text{₹}3,00,000}$  \$.
4. **DOL** = \$  $\frac{8,00,000}{4,00,000} = \mathbf{2.00}$  \$. **DFL** = \$  $\frac{4,00,000}{3,00,000} = \mathbf{1.33}$  \$.
5. **Combined Leverage DCL** = \$ 2.00  $\times$  1.33 =  $\mathbf{2.67}$  \$ (or \$  $\frac{8,00,000}{3,00,000} = 2.67$  \$).

**Practical Solved Problem 2 (Capital Budgeting Net Present Value NPV Calculation):** Project Initial Investment \$  $I_0 = \text{₹}5,00,000$  \$. Expected Annual Cash Inflows: Year 1 =  $\text{₹}1,50,000$ , Year 2 =  $\text{₹}2,00,000$ , Year 3 =  $\text{₹}2,50,000$ , Year 4 =  $\text{₹}1,50,000$ . Discount Rate \$  $k = 10\%$  \$ (PV factors @ 10%:  $Y1=0.909$ ,  $Y2=0.826$ ,  $Y3=0.751$ ,  $Y4=0.683$ ). Calculate NPV.

**PV of Inflow = Cash Flow \* PV Factor; NPV = Total PV - Initial Investment**

**Discounted Cash Flow Working:**

1.  $Y1 \text{ PV} = \$ 1,50,000 \times 0.909 = \mathbf{\text{₹}1,36,350}$  \$.
2.  $Y2 \text{ PV} = \$ 2,00,000 \times 0.826 = \mathbf{\text{₹}1,65,200}$  \$.
3.  $Y3 \text{ PV} = \$ 2,50,000 \times 0.751 = \mathbf{\text{₹}1,87,750}$  \$.
4.  $Y4 \text{ PV} = \$ 1,50,000 \times 0.683 = \mathbf{\text{₹}1,02,450}$  \$.
5. Total PV of Cash Inflows = \$ 1,36,350 + 1,65,200 + 1,87,750 + 1,02,450 =  $\mathbf{\text{₹}5,91,750}$  \$.
6. **Net Present Value (NPV)** = \$ 5,91,750 - 5,00,000 =  $\mathbf{\text{₹}91,750}$  \$ (Accept Project).

**Acing your exams is just a click away!**

Visit [www.degreeelive.in](http://www.degreeelive.in) to download the next module for free.

DegreeLive