Centre of Distance and Online Education

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SET-1

1.a) A company expects to receive Rs 120,000 annually for the next 10 years. If the discount rate is 15%, what is the present value of this annuity?

a) Present Value of an Annuity

To calculate the present value (PV) of an annuity, the formula is:

$PV = A \times [1 - 1/(1+r)n] \div r$

where:

- A = Annual cash inflow (Rs 120,000)

- r = Discount rate (15% or 0.15)

- n = Number of years (10)

Step-by-Step Calculation:

$PV = 120,000 \times [1 - 1(1+0.15)10] \div 0.15$

1. $(1+0.15)10 = 4.0456$

2. $1/4.0456 = 0.2472$

3. $1 - 0.2472 = 0.75281$

4. $PV = 120,000 \times 0.7528/0.15$

5. $PV = 120,000 \times 5.0187 = 602,244$

6. The present value of receiving Rs 120,000 annually for 10 years at a 15% discount rate is approximately Rs 602,244.

b) Describe different sources of long-term financing available to a company

Sources of Long-Term Financing for a Firm

A firm can obtain many long-term financing sources to aid in expansion, asset purchase, or other capital-intensive activities. The most significant sources are:

Equity Financing:

Common Shares: Issuance of shares to investors in return for equity ownership in the firm.

Preferred Shares: These shares provide fixed dividend payments and superior rights over common shares in regard to dividend distributions but typically lack voting rights.

Debt Financing:

Bonds and Debentures: Companies raise bonds or debentures to raise funds from the public or institutional investors.

Term Loans: Those loans which are taken from banks for a definite period of time, and its interest is payable periodically.

Lease Financing:

Capital Leases: The assets such as machinery or equipment for which long term leasing is undertaken are considered to be owned for accounting purposes. Retained Earnings:

Profits retained by the business instead of distribution as dividends.

Venture Capital:

Venture capital financing, which is usually provided in exchange for equity, is typically used for startup and high-growth companies.

Convertible Securities:

Bonds or preferred shares that can be converted into common shares at a predetermined rate.

External Commercial Borrowings:

Loans from foreign lenders, usually for large-scale projects or expansion.

2.a) ABC Corporation forecasts an annual EBIT of $300,000. With $800,000 in 8% bonds and a 10% cost of equity capital, along with a corporate tax rate of 25%, determine the firm's value.

Step 1: Identify the given values

- EBIT (Earnings Before Interest and Taxes) = $300,000
- Debt (Bonds) = $800,000
- Cost of debt = 8%
- Cost of equity = 10%
- Corporate tax rate = 25%

Step 2: Calculate interest expense on debt

$$\text{Interest} = \text{Debt} \times \text{Cost of debt} = 800{,}000 \times 0.08 = 64{,}000$$

Step 3: Calculate Net Operating Profit After Taxes (NOPAT)

$$\text{NOPAT} = \text{EBIT} \times (1-T) = 300{,}000 \times (1-0.25) = 300{,}000 \times 0.75 = 225{,}000$$

Step 4: Compute the value of the unlevered firm (Vu)

The value of the unlevered firm is the present value of the NOPAT using the cost of equity as the discount rate:

Vu = NOPAT /Cost of equity =225,0000.10 = 2,250,000

Step 5: Calculate the tax shield on debt

The tax shield on debt is given by:

Tax Shield = Debt ×T = 800,000×0.25 = 200,000

Step 6: Compute the value of the leveraged firm (Vl)

Vl = Vu +Tax Shield = 2,250,000+200,000 = 2,450,000

The value of ABC Corporation is $2,450,000.

b) Discuss the advantage of the wealth maximization objective of financial management over profit maximization.

Wealth Maximization vs. Profit Maximization

Wealth maximization and profit maximization are two primary objectives in financial management, but wealth maximization offers several advantages that make it a superior goal for modern businesses.

1. Focus on Long-Term Value

Profit Maximization: Focuses on short-term earnings and ignores the long-term sustainability of profits. A company may reduce necessary costs or take risk-prone shortcuts to increase immediate profits, which could damage its future.

Wealth Maximization: Focuses on maximizing the total worth of the firm for shareholders. It takes into account the long-term impact of decisions and fosters sustainable growth by striking a balance between risk and return.

Advantage: Sustainable value is maximized under the wealth maximization while profit maximization may jeopardize future performance

2. Reckons on Risk and Uncertainty

Profit Maximization: The concept overlooks the ingredient of risk embedded in future incomes. Profits, based strictly on accounting incomes, are less likely to signify volatility or any likelihood of earnings.

Wealth Maximization: This takes risk into account through tools such as discounted cash flow (DCF) analysis, net present value (NPV), and the cost of capital. All these methods calculate cash flows with regard to timing and uncertainty.

Advantage: Wealth maximization measures returns with respect to risk, hence better decision-making.

3. Takes into Account the Time Value of Money

Profit Maximization: Does not take into account when profits are realized. It treats a dollar earned today the same as a dollar earned in the future, which is unrealistic in financial terms.

Wealth Maximization: The time value of money** is considered, which implies that cash flows today are worth more than the same cash flows in the future. Tools like NPV and IRR (Internal Rate of Return) are used to value projects and investments accordingly.

Advantage: Wealth maximization leads to better financial planning by accurately evaluating investment opportunities over time.

4. Stakeholder Focus vs. Shareholder Focus

Profit Maximization: Primarily profit for shareholders with little regard to other stakeholders like employees, customers, and society.

Wealth Maximization: The stakeholder approach, which attempts to maximize the overall value of the firm-its reputation, long-term survival, and well-being-benefiting shareholders, employees, and other partners.

Advantage: Wealth maximization supports ethical practices and corporate social responsibility, bringing in trust and sustainability.

5. Balanced Measurement

Profit Maximization: Relies on profits that are an accounting-based measure which can be tampered with either by altering the accounting policies or the accounting practice.

Wealth Maximization: Relies on market-based gauges such as stock prices and the total value of the stock, which reveal the real performance and prospects of the firm.

Advantage: Wealth maximization provides a more reliable and comprehensive measure of success than accounting profits.

3.PQR Ltd is evaluating a $250,000 investment project that is anticipated to produce $60,000 annually for the next four years. With a discount rate of 18%, compute the NPV and provide a recommendation on the project's financial viability

To evaluate whether PQR Ltd should proceed with the investment project, we will compute the Net Present Value (NPV), which is calculated as:

$$NPV = \sum CFt(1+r)t\text{-Initial Investment}$$

Where:

- CFt = Cash inflow in year ($60,000 annually for 4 years)

- r = Discount rate (18% or 0.18)

- Initial investment = $250,000

- t = Number of years (1, 2, 3, 4)

Step 1: Use the NPV formula for cash flows over four years

$$NPV = 60,000(1(1+0.18)1+1(1+0.18)2+1(1+0.18)3+1(1+0.18)4) - 250,000$$

Step 2: Compute discount factors

$1/1.18 = 0.8475$

$1/1.3924 = 0.7182$

$1/1.6437 = 0.6086$

$1/1.9374 = 0.5158$

Step 3: Sum the present value of cash inflows

PVinflows = $60,000 \times (0.8475+0.7182+0.6086+0.5158) = 2.6901$

PVinflows = $60,000$ x $2.6901 = 161,406$

Step 4: Compute NPV

$NPV = 161,406 - 250,000 = -88,594$

Conclusion

Since the NPV is negative (-$88,594), the project does not cover its cost of capital at an 18% discount rate, indicating that it would reduce the company's value. Therefore, the project is not financially viable and should be rejected unless additional benefits not considered in this calculation justify the investment.

SET-2

4. Calculate the cost of equity for X Ltd, which issued Rs 100 equity shares at a 10% premium. The expected dividend at year-end is 15%, growing annually at 8%. Also, find the cost of equity if dividends do not grow.

To calculate the cost of equity for X Ltd, we will use the Dividend Discount Model (DDM), which is based on the formula:

Cost of Equity with Dividend Growth (Gordon Growth Model):

$$Re = D1/P0 + g$$

Where:

- r = Cost of equity

- $D1$ = Expected dividend at year-end (15% of face value)

- $P0$ = Price of the equity share (Rs 100 + 10% premium)

- g = Growth rate of the dividend (8%)

Step 1: Find the expected dividend at year-end (D1)

The expected dividend at year-end is 15% of the face value (Rs 100):

$$D1 = 100 \times 15\% = 15 \text{ Rs}$$

Step 2: Find the price of the equity share (P0)

The shares were issued at a 10% premium above the face value of Rs 100:

$$P0 = 100 + 10\% \times 100 = 100 + 10 = 110 \text{ Rs}$$

Step 3: Apply the Dividend Discount Model (DDM) with Growth

Now, we can calculate the cost of equity with dividend growth (g=8%):

$re = D1/P0 + g = 15/110 + 0.08$

$15/110 = 0.1364$

So:

$Re = 0.1364 + 0.08 = 0.2164$ or 21.64%

Cost of Equity with Growth = 21.64%

Cost of Equity if Dividends Do Not Grow (Zero Growth):

In case there is no growth in dividends, the formula becomes:

$r_e = D_1/P_0$

Using the same values for $D_1 = 15$ Rs and $P_0 = 110$ Rs:

$r_e = 15/110 = 0.1364$ or 13.64%

Cost of Equity without Growth = 13.64%

5.For X Company, which earns Rs 5 per share, capitalized at 10%, and has an 18% return on investment:

a) Calculate the share price at a 25% dividend payout ratio using Walter's model.

b) Determine if this is the optimal payout ratio per Walter's theory.

Walter's Model Formula for Share Price:

$P = D + (E - D/k)/k$

Where:

- P = Share price
- D = Dividend per share
- E = Earnings per share
- k = Cost of equity (capitalization rate)
- r = Return on investment (ROI)
- b = Retention ratio (1 - dividend payout ratio)

Given:

- Earnings per share (E) = Rs 5
- Cost of equity (k) = 10% or 0.10
- Return on investment (r) = 18% or 0.18
- Dividend payout ratio = 25%, so dividend payout ratio =0.25= 0.25

Step 1: Calculate the Dividend per share (D)

The dividend payout ratio is 25%, so the dividend per share (D) is:

$$D = 0.25 \times E = 0.25 \times 5 = 1.25$$

Step 2: Calculate the Retention ratio (b)

The retention ratio is 1−dividend payout ratio

$$b = 1−0.25 = 0.75$$

Now, we apply Walter's formula to calculate the share price.

$$P = D+(E−D/k)/k$$

Substitute the values:

P=1.25+(5−1.25/0.10)0.10 = 387.5

Share Price at 25% Dividend Payout Ratio = Rs 387.5

According to Walter's model, the optimal dividend payout ratio occurs when the firm's ROI equals the cost of equity (r = k).

The optimal dividend payout ratio (D/E) occurs when r > k. The formula for the optimal payout ratio (P*) is:

$$P* = r−k/r$$

Substituting the values

P*=0.18−0.10/0.18 = 0.4444 or 44.44%

Optimal Dividend Payout Ratio = 44.44%

6.Differentiate between:

(a) Gross Working Capital and Net Working Capital.

(b) Permanent Working Capital and Temporary Working Capital.

(a) Gross Working Capital vs. Net Working Capital

1. Gross Working Capital: Gross Working Capital refers to the total amount of a company's current assets, which are the assets that are expected to be converted into cash within one year

(or within the operating cycle). These include cash, accounts receivable, inventory, and other short-term assets.

Formula:

Gross Working Capital = Total Current Assets

Purpose: It highlights the total liquid resources that a company has to carry on its operations.

Example: A company has cash and bank balances, receivables, and inventories with a total of Rs 500,000. Thus, its gross working capital is Rs 500,000.

2. Net Working Capital:

Definition: Net Working Capital is the difference between a company's current assets and current liabilities. It reflects the short-term liquidity position and the ability of the company to fulfill its short term obligations.

Formula: Net Working Capital = Current Assets-Current Liabilities

Purpose: It measures whether a company has enough short-term assets to cover its short-term liabilities, and it provides insight into the financial health and operational efficiency of the business.

Example: If the company has Rs 500,000 in current assets and Rs 300,000 in current liabilities, then the net working capital is Rs 200,000.

Key Difference:

Gross Working Capital relates to the total current assets, while Net Working Capital deals with the differential between current assets and current liabilities. It shows the liquidity position of the business.

(b) Permanent Working Capital and Temporary Working Capital

1.Permanent Working Capital:

Definition: Permanent Working Capital is the minimum amount of current assets that are needed to carry on the business during the entire year irrespective of seasonal fluctuations in business activity. It is an amount that does not change much with time and is needed for the continued running of the company.

  Characteristics:

    It is the minimum amount of current assets.

It is relatively stable and does not fluctuate much.

    Usually tied to the long-term operating requirements.

    Example: A company is always required to maintain cash as well as receivable in the value of Rs 200,000 independent of seasonal ups and downs.

2. Temporary Working Capital:

Definition: Temporary Working Capital is the additional working capital required to meet seasonal or cyclical demands for the business. This is the extra capital needed during peak periods (e.g., holiday season or busy sales months), which can be reduced during off-peak times.

 Characteristics:

 It is flexible and varies depending on the seasonality or short-term changes in business.

 It is not required for operations currently but at peak business.

 Its fluctuation in relation to an operational cycle or growth in business

 For example: the festive season might have an increased need for current assets, such as Rs 100,000 extra for a business due to heightened demand, that is temporary.

Key Difference

Permanent Working Capital is the constant and continuous capital needed for the regular operations, while Temporary Working Capital varies with the seasonal and cyclical needs of the business, reflecting short-term fluctuations.