Lesson 4

Sources and Cost of Capital

Objectives of the lesson

After studying this lesson, students will be able to:

- Understand the traditional, new and alternative sources of long term finance
- Understand the concept, need and determinants of cost of capital,
- Calculate cost of various components of capital.

1.0 Introduction

Finance is the lifeblood of every concern; it is interlinked with all activities performed by a business concern. If the finance not being properly arranged, the business system will not function properly. Accordingly, arrangement of required finance to each department of a business concern is highly desirable, and it needs careful decision. Quantum of finance may depend on the nature and situation of the business concern.

The requirement of the finance may be broadly classified into three categories.

- Long- term finance
- Medium-term finance
- Short-term finance

Long-term finance or fixed capital is needed for investment in long-term (fixed) assets and for permanent working capital. It is required for a period five years or more. The medium-term capital is required for specific projects, normally for a period less than five years; and short-term capital is required for meeting routine operational expenditure. Short-term capital is also called as temporary working capital required for a period up to one year.

Long-term capital means the finance needed for investment in capital assets, such as plant, machinery, furniture, fixture, fittings, land, building etc. for business concern and other fixed expenditure. Funds required to finance permanent working capital is also arranged from long-term sources.

2.0 Sources of Long-term Capital

The sources of long-term capital can be external, and internal. External sources are classified in two broad categories, (i) share capital and (ii) debt or borrowed capital. Share capital includes equity share capital and preference share capital. Debt capital may include loan from banks and financial institutions (term loan), debentures, bonds, venture capital financing, debt (asset) securitization, lease financing, and international financing through ECB, ADR, GDR, FCCB, Masala bonds etc. The internal source of capital primarily

capitalization of retained earnings, i.e., issue of bonus shares. Brief description of these sources is as follows.

2.1 Equity Share Capital: A public limited company may raise funds by issuing equity shares to promotors, institutional investors, general public, and its employees. These are known as ordinary shares as they do not have preference in profit allocation. It means, they are eligible to get dividend if the company earns profit, and that too after making payment of interest or dividend to all other contributors of capital. Equity shareholders are the real owners of the company; they have voting rights in the meeting of the company; hence they control over the management of the company. The equity share capital cannot be redeemed during the lifetime of the company. The liability of the equity shareholders is the value of unpaid value of shares. Various forms of issue of equity shares are as follows.

- Initial Public Offering (IPO): A process of offering shares of a company to general public.
- Offer for Sale: Selling of share to an issuing house, which bears risk of selling shares to other investors.
- Private Placement: A process of selling shares to investment institutions, financial institutions and large private clients.
- Right Issue: Process of offering shares to existing shareholders, employees or any person authorized by a special resolution.

2.2 Preference Share Capital: The capital through preference shares is raised through public issue. Preference shareholders are eligible to get fixed rate of dividend, but they do not have voting rights. They, however, have preferential right to get dividend and get back the initial investment at the time of winding up of the company. Preference shares can be of following types.

- Cumulative and Non-cumulative: Cumulative preference shares are those on which arrear dividend accumulate; but non-cumulative preference shares do not have right to arrear dividend.
- Participating and Non-participating preference shares: Participating preference shares participate in the surplus of the firm; but non-participating preference shares only carry fixed rate of dividend.
- Convertible and Non-convertible preference shares: Convertible preference shares have option to convert into equity shares, whereas non-convertible preference shares do not have such right.

2.3 Bonus Shares: Issue of bonus shares out of retained earnings is also called as ploughing back of profits and capitalization of profits. These profits belong to equity shareholders increase the net worth of the company. Bonus shares are issued out of (i) free reserves, (ii) security premium account, and (iii) capital redemption reserve.

2.4 Loan from Banks and Financial Institutions (Term Loan): Term Loans constitute one of the major sources of debt finance for a long-term project. Term loan carries fixed rate of interest. These loans are offered by commercial banks and financial Institutions. These financial institutions may be national, such as IDBI, IFCI, ICICI, SFCs, NIDC, IRBI, LIC, UTI etc.) or interntional, such as IBRD, IFC, ADB. Term Loans, which can be either in rupee or foreign currency, are generally secured through a first mortgage or by way of depositing title deeds of immovable properties or hypothecation of movable properties. In addition to the security, financial institutions also place restrictive covenants while granting the term loan. The interest and principal payments are obligatory and threaten the solvency of the firm. The restrictive covenants may, to a certain extent, hinder the company's future plans.

2.5 Bridge Finance: A loan taken by a company normally from commercial bank for short period because of pending disbursement of loan sanctioned by financial institution. Though, it is of short-term nature, but since it is an important step in the facilitation of long-term loan, it is being discussed along with the long-term sources of funds.

2.6 Build-Operate-Transfer (BOT): A type of project financing, wherein a private entity receives a franchise to finance, construct, operate, maintain and transfer after specific period. Under a BOT contract, an entity, usually government grants a concession to a private company to finance, build and operate a project. The company operates the project for a certain period of time (normally 20 – 30) with the goal of recouping its investment, then transfers control of the project to the government. BOT projects are normally large-scale, greenfield infrastructure projects that would otherwise be financed, built and operated solely by the government.

2.7 Build-Lease-Transfer (BLT): Also called as lease financing. In this, control of project is transferred from the owner to lessee for specific period. The build-lease-transfer (BLT) is a public-private-partnership (PPP) project model in which a private organization designs, finances and builds a facility on leased public land. The private organization operates the facility for the duration of the lease and then transfers ownership to the public organization.

2.8 Venture Capital Financing (VCF): It refers to financing a new, high risky, potential venture promoted by qualified entrepreneurs who lack experience and funds to give shape to their ideas.

- Equity Financing: Long-term source of finance (up to 49% of total equity capital).
- Conditional Loan: Repayable in the form of Royalty on sales (2%-15%) after the venture is capable to generate sale.
- Participating Debentures: On these, no interest is charged in start-up stage, low rate of interest in growth stage, and high rate of interest in maturity stage.
- Income Note: Hybrid security which combines features of conventional and conditional loan. Entrepreneur pays both interest & royalty on sale, but, at substantially low rates.

2.9 Debt Securitization: It is a process by which a company makes pool of its illiquid financial assets, form a consolidated financial instrument which is issued to investors. The process leads to the creation of financial instruments that represent ownership interest in or are secured by a segregated income producing asset or pool of assets. These assets are generally secured by personal or real security such as automobiles, real estate, or equipment loans but in some cases are unsecured. The basic process of debt securitization can be split up into three functions, viz., (i) origination, function, (ii) pooling function, and (iii) securitization function.

Debt securitization is done in six stages. These are (i) identification of assets, (ii) pooling/ consolidation and transfer of assets to special purpose vehicle (SPV), (iii) creation of mortgage backed securities (iv) credit rating, (v) issue of securities, and (vi) redemption. The crucial link in the securitization chain is the creation of a SPV, which intermediates between the primary market for the underlying asset and the secondary market for the asset backed security. The SPV is a separate entity, incorporated in consonance with prevailing laws.

2.10 Debentures and Bonds: A Debenture is a document issued by the company. It is a certificate issued by the company under its seal acknowledging a debt. Debenture includes debenture stock, bonds and any other securities of a company whether constituting a charge of the assets of the company or not. Debentures and bonds may be of following types.

- Secured and unsecured debentures: Secured debentures are also called as mortgaged debentures because these are issued against mortgage of the assets of the company. But, unsecured debentures, also called as naked debentures are not backed by any security or assets of the company.
- Convertible and non-convertible debentures: Convertible debentures are the debentures whose holders have the option to get them converted wholly or partly into equity shares.
- Callable and Puttable debentures: Callable debentures are issued for fixed period with certain lock-in-period. These can be redeemed by issuer (company) before maturity, but not before lock-in-period. Puttable debentures are redeemable on the will of debenture holder, but after lock-in-period only.
- Zero Coupon Bonds: These bonds, also known as deep discount bonds, do not carry any interest; but these are sold by issuing company at a discount. The difference between the discounted value and maturing or face value represents the interest to be earned by the investor on such bonds.

2.11 Global Depository Receipt (GDR): Issue of global depository receipt (GDR) is one of the most popular ways to tap the global equity markets. A company can raise foreign currency funds by issuing equity shares in a foreign country. It is an instrument in which a company located in a country issues one or more of its shares or convertibles bonds in global market. In GDR, an overseas depository bank (usually, a large international bank) outside

the domestic territory of a company, issues GDR against shares issued by a domestic firm (deposited with depository) to residents outside the domestic territory.

2.12 American Depository Receipt (ADR): An American depositary receipt (ADR) is a negotiable instrument issued by a US depository bank representing a specified number of shares, often one share of a foreign company's stock. It offers US investors a way to purchase stock in overseas companies that would not be available otherwise. Foreign firms also benefit, as ADRs enable them to attract American investors and capital without the hassle and expense of listing on US stock exchanges. The ADR trades on US stock markets as any domestic shares would.

2.13 External Commercial Borrowing (ECB): External Commercial Borrowing (ECB) is a foreign currency loan availed by Indian corporates and public sector undertakings (PSUs) from non-resident lenders. These are permitted by the government as a source of finance for indian corporate for expansion of existing capacity as well as for fresh investment. Most of these loans are provided by foreign commercial banks and other institutions with a minimum average maturity of 3 years. ECBs includes commercial bank loans, buyers' credit, suppliers' credit, securitized instruments such as floating rate notes and fixed rate bonds etc., credit from official export credit agencies and commercial borrowings from multila teral financial institutions.

2.14 Foreign Currency Convertible Bonds (FCCB): Foreign currency convertible bonds (FCCBs) are issued by Indian listed companies in overseas/ foreign market at nominal interest rates. These bonds carry a clause to convert such bonds to equity shares at pre-defined price mid-way during the term of the bond. The conversion of bonds in to shares can be done at the option of bond issuer or bond holder. Means either company or foreign investor can request for conversion from bond to equity shares. The conversion is done at predefined price, generally at premium price as share prices can always go up in future. It is considered as a good option for investors during bull run.

2.15 Masala Bonds: Masala bonds are rupee denominated bonds issued outside India to foreign investors who have an interest in investing in India, but without direct exposure. These bonds are issued by International Finance Corporation (IFC), member of the World Bank for raising funds to use in India for infrastructure development. Masala bonds are denominated in Rupee, however, settled in US Dollars. Hence there is risk of currency rate risk for investors.

3.0 Cost of Capital

Cost of capital is the minimum required rate of return needed to justify the use of capital. In the investment decisions, an individual or a manager encounters innumerable comp eting investment opportunities to choose from. For example, a person has option to invest his saving of Rs.1,000 either in 11%, 3 year postal certificates or in 12%, 3 year fixed deposit in a bank. In both the cases payment is assured by the government. So, both the investment

opportunities reflect equivalent risk. If the person decides to deposit in bank, he will have to forego the opportunity of investing in postal certificates which is 11%.

It is important here to explain the concept of opportunity cost. Opportunity cost is the rate of return foregone on the next best alternative investment opportunity of comparable risk. Thus, the required rate of return on an investment project is an opportunity cost. It is a concept having different meanings which can be understood from the following.

From firm's point of view, it is the minimum required rate of return needed to justify the use of capital. If a firm raised Rs. 50 lakhs through the issues of 10% debentures, for justifying this issue it has to earn a 10% minimum rate of return on investment. From investor's view point, it is the measure of sacrifice made by him/ her in order to go for capital formation. For example, an investor investing Rs. 1,00,000 in equity shares of a company instead of a bank deposit which pays 7% interest. Here investor's sacrifice of 7% interest is the opportunity cost for him. If we consider capital expenditure's view point, the cost of capital is the minimum required rate of return or the hurdle rate or target rate or cut off rate or any discounting rate used to value cash flows.

4.0 Definition of Cost of Capital

Cost of capital, also known as 'cut-off rate', 'hurdle rate' of return' and 'minimum rate of return' is the return expected by the providers of capital (shareholders, lenders and debt-holders) to the business as a compensation for their contribution to the total capital.

According to Solomon Ezra, "Cost of capital is the minimum required rate of earnings or the cut-off rate of capital expenditure". William and Donaldson defined cost of capital as "the rate that must be earned on the net proceeds to provide the cost elements of the burden at the time, they are due". In view of James C. Van Horne cost of capital is a "cut-off rate for the allocation of capital to investment of projects. It is the rate of return on a project that will leave unchanged the market price of the stock".

Cost of Capital comprises three components, (i) risk-less cost of the particular type of financing (r_j), (ii) business risk premium (β_j), (iii) and the financial risk premium (f_j). Symbolically, cost of capital may be represented as: $K_j = r_j + \beta_j + f_j$

5.0 Determinants of Cost of Capital

The cost of capital is affected by several internal and external factors. Some of the important behavioral factors are as follows.

- Investors' expectations: About annual return, terminal returns and capital gains.
- Expectations of market intermediaries: Commission to brokers, underwriters, merchant bankers etc.
- Corporate tax rates: Corporate tax reduces cost of borrowed sources as interest qualifies for tax rebate.

- Net cash inflows at the beginning: It means net proceed or the amount realized from a source of capital (Amount of capital + premium on issue – discount on issue – issue expenses)
- Net cash outflows: It includes interest on borrowing, dividend on share capital and redemption value of external contributors of capital.

6.0 Calculation of Cost of Capital

Before calculating overall (composite) cost of all sources of capital, a financial manager has to compute the specific cost of each source of fund under consideration for designing capital structure or the part of firm's capitalization. Generally, the component cost of a specific source of capital is equal to the investor's expectations or his required rate of return. Investors expectations may include interest rate, discount on debenture; dividend and share of profit on preference shares; earnings and dividend per share, and capital appreciation on equity shares. It is important to mention that investors' required rate of returns is adjusted for taxes while calculating the cost of a specific source of fund. In the investment analysis, net cash flows are computed on after tax basis, therefore, the component costs, used to determine the discount rate, should also be expressed on an after-tax basis.

Now, the question is, how does the firm know about the required rates of return of investors? The required rates of return are market determined. They are established in the capital markets by the actions of competing investors. The influence of market is direct in the case of new issue of ordinary and preference shares and debt. The market price of securities is a function of the return expected by investors. The demand and supply forces work in such a way that equilibrium rates are established for various securities. Thus, the opportunity cost of a source of capital is represented as:

$$\text{Io} = \frac{\text{CF}_1}{(1+\text{K})^1} + \frac{\text{CF}_2}{(1+\text{K})^2} + \frac{\text{CF}_3}{(1+\text{K})^3} + \cdots \frac{\text{CF}_n}{(1+\text{K})^n}$$

Here: I_o = Capital supplied by investors in period O (Net cash inflow), CF_1 = Returns expected by investors (Cash outflows), and K = Required rate of return or the cost of capital,

Thus, cost of capital is the internal rate of return which equates the present value of cash inflows and present value of cash outflows of a financial opportunity. The outflows in the equation represent the returns which investors could earn on the alternative investment opportunities of equivalent risk.

The process of calculating cost of specific sources of funds is discussed below.

6.1 Cost of Debt: Cost of debt taken from bank or financial institution for specific period at certain rate of interest is calculated as:

$$\text{Kd (After-tax)} = \frac{\text{I}_1}{\text{NP}} \times (1 - \text{t})$$

Here: Kd = Cost of debt, I = Amount of Interest Payable at year end, NP = Net Proceed (i.e. Amt. of debt – Exp. on arranging debt), t = Corporate tax rate.

The interest paid/ payable on debt is a charge on P&L A/c of the company, hence, it qualifies for tax deduction.

6.2 Cost of Debenture: A company may issue debentures at face value or at discount or premium. It may redeem them in the similar fashion. In such cases the maturity value and net proceed will change. The contractual or coupon rate of interest forms the basis for calculating the cost of any form of debt. Computation of cost of debenture or bond is relatively easy because interest rate that is payable on debt is pre-fixed. For calculating cost, debentures can be divided in two categories, viz., irredeemable (perpetual) and redeemable.

The cost of irredeemable debentures is calculated as:

$$Kd = \frac{I_1}{NP} \times (1 - t)$$

The cost of redeemable debentures can be calculated as:

$$Kd = \frac{I_1 + \frac{MV - NP}{N}}{\frac{MV + NP}{2}} \times (1 - t)$$

Here: Kd = Cost of Debenture, I = Amount of Interest Payable at year end, MV = Maturity Value, NP = Net Proceed (Face Value $\pm$ Premium/ Discount – Issue Expenses), N = Maturity Period, (MV + NP)/ 2 = Average Debt, t = Tax Rate

6.3 Cost of Preference Shares: The measurement of the cost of preference capital poses some conceptual difficulty. In the case of debt, there is a binding legal obligation on the firm to pay interest, and the interest constitutes the basis to calculate the cost of debt. However, in the case of preference capital, payment of dividends is not legally binding on the firm and even if the dividends are paid, it is not a charge on earnings to preference shareholders. From calculation point of view preference shares can also be irredeemable (perpetual) and redeemable. The cost of irredeemable preference shares is calculated as:

$$Kp = \frac{D_1}{NP}$$

Cost of redeemable preference shares is calculated as:

$$Kp = \frac{D_1 + \frac{MV - NP}{N}}{\frac{MV + NP}{2}}$$

Here: Kp = Cost of Pref. Shares, D_1 = Expected Pref. Dividend at year end, MV = Maturity Value, NP = Net Proceed (Face Value $\pm$ Premium/ Discount – Issue Exp.), N = Maturity Period, (MV + NP)/ 2 = Average Amount of Preference Capital

Dividend on preference share capital is paid out of post-tax profit, so the cost of preference share capital is already after tax.

6.4 Cost of Equity: Firms may raise equity capital internally by retaining earnings. Alternatively, they may distribute entire earnings to equity shareholders and raise equity capital externally by issuing new shares. In both cases, shareholders are providing funds to the firms to finance their capital expenditures. Therefore, the equity shareholders' required rate of return will be the same whether they supply funds by purchasing new shares or by forgoing dividends which could have been distributed to them. There is, however, a difference between retained earnings and issues of equity shares from the firm's point of view. The firm may have to issue new shares at a price lower than the current market price. Also, it may have to incur flotation costs. Thus, external equity will cost more to firm than the internal equity. The cost of equity capital is calculated in different ways depending upon choice of firm, situation and availability of information. The popular methods of calculating cost of equity capital are (i) Earning Yield Approach, (ii) Dividend Yield Approach, (iii) Dividend Yield Plus Growth Approach, (iv) Dividend to Average Net Worth Approach, and (v) CAPM Approach

Earning Yield Approach: This approach correlates the earnings of the company with the market price of its share. Accordingly, the cost of ordinary share capital depends on the expected earnings of a company. The argument behind this is that each investor expects a certain amount of earnings, whether distributed or not from the company in whose shares he invests. The formula for calculating cot of equity capital is as follows.

$$Ke = \frac{E_1}{P_0}$$

Here: E_1 = Expected EPS at year end, and P_0 = Current Market Price of Share

Dividend Yield Approach: This approach is based on the basic form of the dividend valuation model. In this approach cot of equity capital is calculated by following formula.

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

Here: D_1 = Expected DPS at year end, , and P_0 = Current Market Price of share.

This model assumes that dividends shall be paid at a constant rate to perpetuity.
In case of newly establishing companies, we consider net proceed in place of MPS.

Dividend Yield Plus Growth Approach: In case of existing companies, if dividend paid has increased year over year, we use Dividend Yield + Growth approach. This approach provides following equation for calculating cost of equity.

$$Ke = \frac{D_1}{P_0} + G; \text{or } Ke = \frac{D_0(1+G)}{P_0} + G$$

Here: G, compounded annual growth rate (CAGR) in dividend is calculated as:

$$(D_n/D_0)\text{^}(1/n) - 1, \text{ or}$$

$$G = \left(\frac{D_n}{D_0}\right)^{1/n} - 1$$

Here: D_n = Dividend paid in ending year, D_0 = Dividend paid in beginning year, $n = (n-1)$

Dividend to Average Net Worth Approach: If share of the company is not currently traded in the market, we use Book Value of Share or Average Net Worth in place of MPS.

$$Ke = \frac{D_1}{ANW}$$

Here: D_1 = Expected Dividend at year end, ANW = Average Net Worth.

Average Net Worth is calculated as:

$$ANW = \frac{NW_{t-1} + NW_t}{2}$$

Here: NW_{t-1} = Net Worth in the beginning, and NW_t = Net Worth at the end of the year.

Net worth includes Equity Share Capital + Reserve & Surplus + Credit Balance in P&L A/c

Capital Asset Pricing Model (CAPM) Approach: This approach describes the relationship between rate of return on risk free asset/ security, market rate of return, and the security beta coefficient. The formula is:

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

Here: R_f = Expected Risk - Free Rate of Return, R_m = Expected Market Rate of Return, and β = Expected Risk or Beta coefficient (Volatility of return on security in relation to market return)

6.5 Cost of Retained Earnings: Retained earnings (RE) appear to carry no cost as they represent funds which have not been raised from outside. But, the opportunity cost of dividend foregone by shareholders represent the cost of RE. In general, cost of RE (Kr) is considered as equal to cost of equity (Ke); but, in reality, Kr < Ke due to implication of personal tax on dividend and the floatation cost. Here, cost of RE is calculated as:

$$Kr = Ke\ (1 - t_p)(1 - f)$$

Here: Ke = Cost of Equity, t_p = Personal tax rate on dividend, and f = Floatation cost.

Summary

Capital refers to any financial resources or assets owned by a business that are useful in furthering development and generating income. In other sense, it refers to funds raised to support a business or project. The sources of long-term capital can be external, and internal. External sources are classified in two broad categories, (i) share capital and (ii) debt or borrowed capital. Share capital includes equity share capital and preference share capital. Debt capital may include loan from banks and financial institutions (term loan), debentures, bonds, venture capital financing, debt (asset) securitization, lease financing, and international financing through ECB, ADR, GDR, FCCB, Masala bonds etc. The internal source of capital primarily capitalization of retained earnings, i.e., issue of bonus shares.

Cost of capital may be viewed in different senses. From investors' view point, it is the measurement of the sacrifice made by him in order to capital formation; from firm's view point, it is the minimum required rate of return needed to justify the use of capital; and from capital expenditure point of view, it is the minimum required rate of return used to value cash flows. There are different approaches for calculating cost of various components of capital, which a firm can use according to its choice and need. Cost of capital is highly beneficial in designing optimal capital structure, investment evaluation, financial performance appraisal, and also in many decisions such as dividend, credit policy etc.

Self check Questions

1. Explain clearly various sources of long term finance for business firms.
2. Write short notes: (a) Methods of equity issue (b) Bridge finance, and (c) External commercial borrowings
3. Elucidate: (a) Meaning and sources of venture capital financing (b) Meaning and process of debt securitization
4. Differentiate between (a) American depository receipt and Global depository receipt, (b) Foreign currency convertible bonds and Masala bonds.
5. What do you mean by own capital? Explain clearly methods of calculating cost of equity.
6. Explain: (a) Calculation of dividend growth rate, and (b) Capital asset pricing model in cost of equity capital.
7. Write short notes on (a) Cost of debt capital, (b) Cost of preference shares, and (c) Cost of rationed earnings
8. Attempt related practical problems by refering suggested readings.

Practical Problems on Cost of Capital

Illustration # 1: A company has taken loan of Rs. 10 lakh from IDBI at 10% interest rate. It paid loan processing charges (including legal exp.) Rs. 20000. If corporate tax rate applicable to the company is 35%, the post-tax cost of debt will be:

$$\text{Kd (After-tax)} = \frac{100000}{980000} \times (1 - 0.35) = 0.663, \text{ Say } 6.63\%$$

Illustration # 2: A company issued 10% debentures of Rs. 100 each at 2% discount. These are redeemable after 5 years at 3% premium. The issue expenses are 1% and corporate tax rate applicable to the company is 35%. The post-tax cost of debenture will be:

$$\text{Kd} = \frac{10 + \frac{103 - 97}{5}}{\frac{103 + 97}{2}} \times (1 - 0.35) = 0.0728, \text{ Say } 7.28\%$$

Here: $I = 10,\ MV = (FV + \text{Premium}) = (100 + 3) = 103,\ NP = (FV - \text{Dis.} - \text{Issue Exp.}) = (100 - 2 - 1) = 97, N = 5 \text{ Years, and } t = 0.35$

Illustration # 3: A firm is planning to issue 10% redeemable preference shares of face value of Rs. 100 each at 3% discount. The flotation cost is estimated at 2% of the face value of shares and the tax rate is 50%. Calculate the post tax cost of preference share if these shares are to be redeemed after 8 years at 5% premium.

Here, Maturity Period $= 5$ years, Dividend $= 10,\ MV = (FV + \text{Premium}) = (100 + 5) = 105, NP = (FV - \text{Discount} - \text{Issue Expenses}) = (100 - 3 - 2) = 95.$

The post-tax cost of preference share will be:

$$K_p = \frac{10 + \frac{105 - 95}{8}}{\frac{105 + 95}{2}} = 0.1125 \text{ or } 11.25\%$$

Illustration # 4: A firm has issued 5,000 equity shares of Rs. 100 each. The firm expects after-tax profit of Rs. 50,000 and is planning to declared dividend of 8% at the end of the yaer. The current market price of these shares is Rs. 160. Calculate the cost of equity capital by using (i) Earnings yield approach, and (ii) Dividend yield approach.

Earnings yield approach

$$K_e = \frac{E_1}{P_o} = \frac{10}{160} = 0.625 \text{ 0r } 6.25\%$$

Dividend yield approach.

$$K_e = \frac{D_1}{P_o} = \frac{8}{160} = 0.05 \text{ 0r } 5\%$$

Illustration # 5: If dividend paid in year 2016, 2017, 2018, 2019 and 2020 was Rs. 10.00, 12.50, 15.00, 17.50 and 20.00; the growth rate will be:

$(20/10)\text{^}(1/4) - 1 = 0.1892, \text{ i.e.}, \ 18.92\%$

Illustration # 6: If risk free rate of return (R_f) is 5%, market rate of return (R_m) is 14%, and security beta coefficient (β) is 0.8, cost of equity by CAPM approach will be:

$$Ke = 5 + 0.8\ (14 - 5) = 12.2\%$$

Illustration # 7: If cost of equity of a firm is 20%, floatation cost is 5%, and shareholders' personal tax rate on dividend is 30 percent, firm's Kr will be:

$$Kr = 20(1 - 0.30)(1 - 0.05) = 13.30\%$$

Illustration # 8: A company established 8 years before is planning to raise further equity capital of Rs. 50 crore. The company, since inception has observed steady growth in business, hence following good track record of equity earnings. In the last five years, the earnings per share have been Rs. 1.25, Rs. 1.50, Rs. 1.80, Rs. 2.20 and Rs. 2.50. The company is following policy of 80 percent dividend pay-out. The equity shares of the company are currently traded in the market at Rs. 24.00. The company is in position to sell new equity at market price. The expenses on issue are estimated at 3 percent of issue price. It is expected that new equity issue will not affect earning capacity of the company and equity earnings will increase at the same rate as observed in last five years. You are required to calculate (i) cost of equity, (ii) cost of retained earnings, if shareholders' personal dividend tax rate is 30 percent, and floatation cost will remain same.

Solution:

Calculation of Dividend Per Share

	2016	2017	2018	2019	2020
EPS	1.25	1.50	1.80	2.20	2.50
DPS (80%)	1.00	1.20	1.44	1.76	2.00

Calculation of Dividend Growth Rate

$$G = \left(\frac{D_n}{D_0}\right)^{1/n} - 1$$

$$G = \left(\frac{2}{1}\right)^{1/4} - 1 = 0.1892$$

Here $n = (5 - 1) = 4$

(i) Calculation of Cost of Equity

$$Ke = \frac{D_1}{P_0} + G = \frac{D_0(1 + G)}{P_0} + G$$

$$Ke = \frac{2(1 + 0.1892)}{23.28} + 0.1892 = 29.14\%$$

(ii) Calculation of Cost of Retained Earnings

$Kr = Ke\ (1 - t_p)(1 - f)$
$Kr = 29.14(1 - 0.3)(1 - 0.03) = 19.79\%$

Illustration # 9: A company has been doing well on National Stock Exchange of India Ltd. for past several years. The stock analysts are trying to study the returns of the company with broad based index of NSE. According to them, the return on stock of the company change by a factor of 1.25 times as that of index. If expectation of returns on the market is 14 percent and the returns on government securities is 6 percent, what return do you expect from the company?

Solution:

Given: Market Rate of Return (R_m) = 14%, Risk Free Rate (R_f) = 6%, Beta of Stock (β) = 1.25

So, Risk Premium = $(R_m - R_f) = (14 - 6) = 8\%$
Expected Return from Company, i.e., $Ke = R_f + \beta(R_m - R_f)$
$Ke = 6 + 1.25(14 - 6) = 16\%$